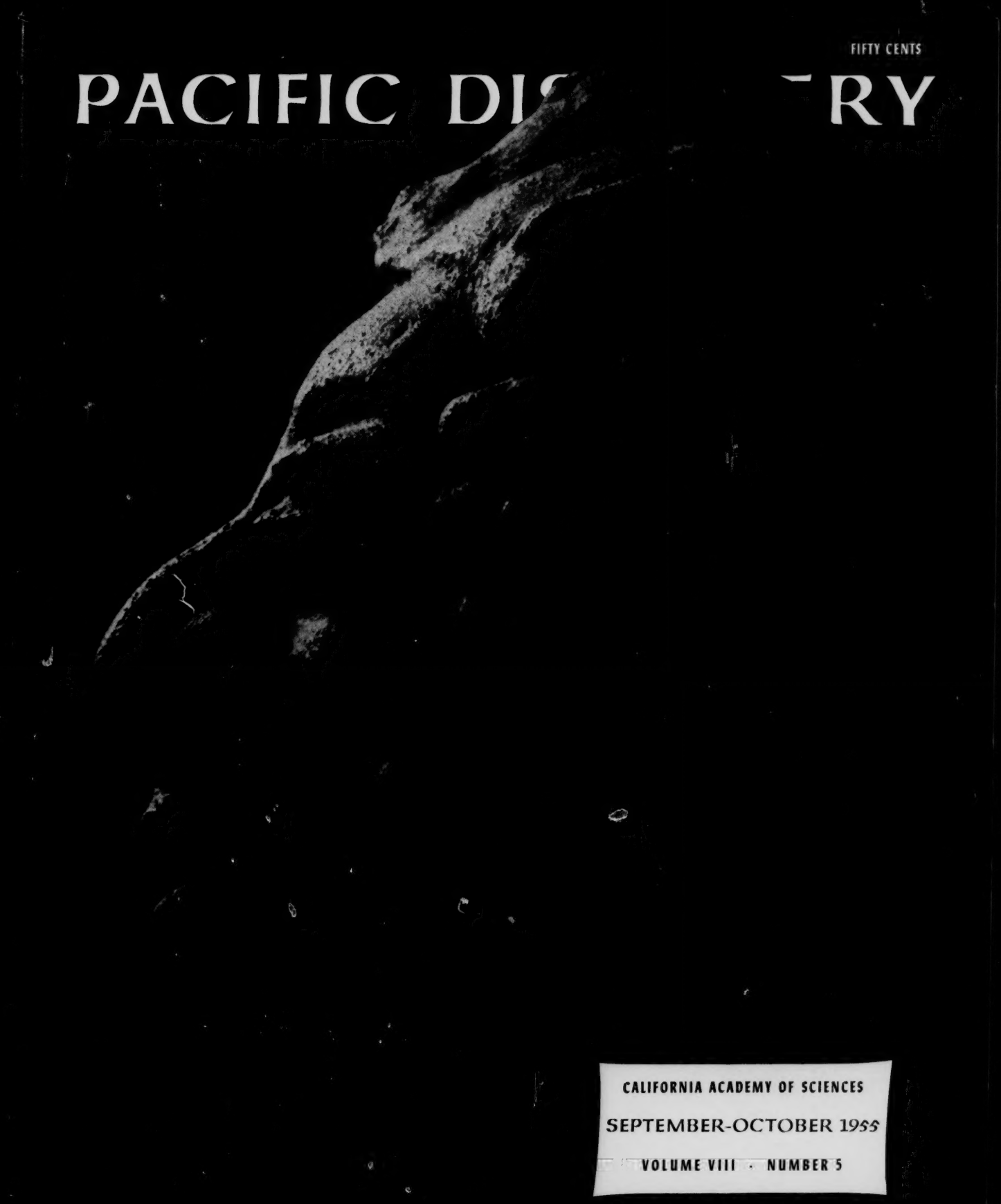
FIFTY CENTS

PACIFIC DISCOVERY



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PACIFIC DISCOVERY

PRE-DISCOVERY

IN HIS EXCELLENT BOOK, *The Floor of the Ocean,* Reginald A. Daly, the famous geologist of Harvard University, writes: 'The major mysteries of land geology itself are planetary, and to a large extent their secrets lie hidden under the ocean. The learning of those secrets will mean a wide extension of the field of knowledge and therewith a new call on human courage.' Obviously these riddles can best be solved through collaboration between geology and oceanography. . . . " So begins one chapter of a recent book with the romantic title *Westward Ho With the Albatross,* by one of the world's ranking oceanographers, Professor Hans Pettersson, director of the Institute of Oceanography, University of Göteborg.

Everyone has now heard of the Geophysical Year in which the world is soon to try a vast new experiment in international coöperation, complete with flying basketballs. Geodesy, geophysics, oceanography are formidable terms for most of us to wrestle with, but they will be a welcome change on the front page from the technical terminology of warfare. It might be a good idea, and some relief from a diet of nuclear physics and such, to bone up a bit on, say, oceanography. A few months ago the Scripps Institution of Oceanography, a branch of the University of California, at La Jolla, accepted a grant in seven figures specifically for the all-out oceanographic investigation of the North Pacific. Science is being backed by governments all over the world on a play for big stakes. The secrets of nuclear fission yielded to the mass onslaught of the Manhattan Project. Most people, including some in high places, may be thinking of space travel as next on the list, but the undertaking of the Geophysical Year is recognition of the fact that Earth herself still holds countless secrets. And to a large extent these secrets, as Professor Daly said in his book, "lie hidden under the ocean." Hence the rise of the science of oceanography to its current – and even greater future – prominence.

Alexander von Humboldt, 1769–1859, has been called the founder of the science of oceanography as well as the man who first introduced modern scientific method to field work in the physical and natural sciences. His recent biography by Helmut de Terra (*Humboldt,* Alfred A. Knopf, New York, 1955) would be a good place to begin your reading. Then for a sufficiently nontechnical and often entertaining description of a full-dress modern oceanographic expedition – in this case a voyage around the world – turn to Professor Pettersson's book already mentioned (*Westward Ho With the Albatross,* E. P. Dutton, New York, 1953). It will give you the background to understand how and why oceanographers do some of the things you will be hearing about.

PD'S AUTHORS

THE BIRD behind the name of the ship is the subject of **Dr. Robert Cunningham Miller's** "Wings of the Storm." Since Dr. Miller was a sometime oceanographer before he assumed the directorship of the California Academy of Sciences, we may expect to learn more of the happenings in that science from him, as developments occur. . . . ¶In defense of Pidgin English, we hear from a man of many interests, **Donald H. Clark** of Seattle. We have already notified him that we we intend to invite a statement on the other side. . . . ¶ **Dr. John E. Cushing, Jr.,** is a professor of biology in the Santa Barbara College of the University of California, and an experimental biologist. . . . ¶ **Lillian Robinson Pérez** (Miss Robinson according to the Spanish custom of Quito, Ecuador, where she lives) is an ardent amateur student of archeology in a part of the world where startling new developments can, and do, occur often enough to indicate that the end of the story is nowhere in sight. . . . ¶ The photograph which **John H. Applegarth** of California Polytechnic, San Luis Obispo, presents here has never before been published, although an early print from the negative, with the trip cord still showing around the lion's foot, appeared a few years ago in a guidebook to Sequoia National Park, without the photographer's permission, **Dr. Robert T. Orr** is curator of birds and mammals at the California Academy of Sciences. . . . ¶ **George W. Bunton** is manager of the Academy's Morrison Planetarium. D.G.K.

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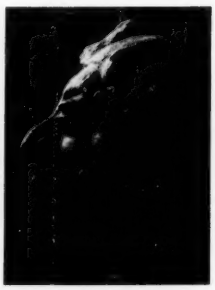

PACIFIC PROFILE – clay head, strongly fashioned, from northern Manabí, Ecuador. (Dr. Di Capua Collection, Quito; photo by Bodo Wuth. *See page 16.*)

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EDITORIAL

On Escaping to the South Seas

NOT LONG AGO the absence of a man we had been doing business with for some years grew noticeably extended. At the time of our concerned inquiry as to possible illness, or change of jobs, it hadn't yet struck us that a certain attractive secretary had concurrently been away for more than the usual vacation period. An acquaintance outside the firm volunteered the juicy morsel that the two had taken off together "for the South Seas."

Our business friend had been a family man, of upright and proper pursuits. The pursuit of illicit adventure now colored him with a Walter Mitty hue. As it turned out, we were to have a rather let down feeling when more reliable sources eventually disclosed that Mexico City had been the target of the fling and that our friend had since returned to family, business, and respectability in another city. Was not "the South Seas" the only true goal of escape in the grand manner? It appeared that our friend was not made of the real stuff. Mexico was altogether too easy, and downright commonplace of him it was, we thought. And as adventurer, he had proven not only timid but a quitter; there would be no niche for him in the escapists' hall of fame.

Since the close of this incident we have read some books by and about people who made it all the way. It may be what failed our friend was not his grit but his gold! The heroes of our books fall into three classes: they were born in the South Seas, they got there on research grants, or they started out well heeled.

Take Robert Louis Stevenson, for instance. His escape, for health's sake, from the chill of Britain and Saranac to the tropical Pacific and his final home in Samoa was financed by the success of a popular author. The need for the ready in deep-sea yachting—as it is shown in Joseph W. Ellison's salty contribution to Stevensoniana, *Tusitala of the South Seas* – is the more vital today when a dollar buys fewer nautical miles than it did in the '80s when R.L.S. chartered the *Casco* out of San Francisco to Tahiti and Hawaii.

Some means were plainly behind the schooner *Viator's* island wandering, as logged recently in *Tahiti, Voyage Through Paradise* by a *Reader's Digest* editor, George T. Eggleston. Few of us could have afforded the half-year *Tahitian Holiday* of David Huntington, his wife and son. Research funds put the Swedish anthropologist Bengt Danielsson, with his wife Marie-Thérèse, back for 18 months on *Raroia,* atoll in the Tuamotus where he landed from the world's most famous raft, the *Kon-Tiki.* Tom Davis, of *Doctor to the Islands* fame, was Rarotonga-born. We shall see later what it cost him to *leave* the islands!

All right; coming or going, it takes money. You can try stowing away – a free-loader turned up on the Huntington's freighter to Papeete – but working your passage is out, these days, unless on a private yacht. Suppose you are making it, though, all the way to the South Sea Islands of Melville, Stevenson, Pierre Loti, Gauguin, Robert Dean Frisbie, Nordhoff and Hall, the photographer Frederick Simpson, and of your own dreams. Take some books for the voyage that will prepare you for the islands as they are. The ones we mention here are perhaps as good as any, covering the Polynesian heartland – Tahiti and the Society group, the Tuamotu Archipelago, the Cook Islands, and Samoa as Stevenson knew it.

Tusitala, the story-teller, the Samoans called Robert Louis Stevenson in their deep affection for him. The author of *Treasure Island* had dreamt the South Sea dream long before he lived it; and living it, during his last six short years, he found it more real, for him, than the English drawing-room life his consumptive frailty exiled him from. He flourished in the tropic sunshine, but above all in the human warmth of admiration and affection. These he had in full from his wife, his mother, and the others of his household, afloat or ashore. But to the Polynesians, whom he admired and loved in turn, he became almost a god.

Ellison has interwoven the two stories: Stevenson's rise to his peak of success as a novelist; and Tusitala's flaming zeal in the cause of Polynesian – particularly Samoan – independence and cultural integrity. The famous Scot longed to see kingdoms grow firm enough in Samoa and Hawaii to thwart European and American territorial ideas. Ellison has indeed worked into the book an engrossing account of Samoan history at the point where Germany, Great Britain, and the United States were mixing it up in Apia harbor, and where Stevenson entered to throw his weight with lusty enthusiasm, but vainly, on the side of *faa Samoa* – Samoa for Samoans. The apparent digression from the story of Stevenson in the South Seas is actually the needed build-up for Stevenson's quixotic but all-absorbing part in the international imbroglio, while giving us – for our purposes not just incidentally – the historical background for the understanding of Samoa as we would find it today. The book's other present value to us is that of insight into Polynesian character and way of life through the open and penetrating mind and sympathetic heart of Tusitala of the South Seas.

Stevenson built Vailima, his last home, in Samoa because these islands afforded regular mail service to his various publishers and correspondents, but Tahiti had been his first choice. Tahiti still epitomizes the romantic South Sea island. Often quoted is the R.L.S. tribute to native Tahitians: "God's best—at least God's sweetest works." For James Norman Hall Tahiti was "the spot he loved above all others on this earth," to quote George T. Eggleston's Preface to his *Tahiti, Voyage Through Paradise.*

South and west of the arching screen of atolls of the Tuamotu Archipelago rise the high islands of the Society group – Tahiti, their queen with her attendant Moorea, Huahine, Raiatea and Tahaa, Bora Bora and

Tubai, Maupiti, and Mopelia. Away to the southwest lies Rarotonga, chief of the Cook Islands. Join all these by a line, in that order, and you have the track of the *Viator,* skippered by Harry Close, owner, and carrying George and Hazel Eggleston on the kind of island cruise many dream about but few can realize. In case you, too, can spend six months or so in this idyllic way, it's quite simple – once you get as far as Papeete. Just charter a yacht, the harbor is full of them.

The farther the Egglestons got from the civilized veneer of Tahiti, the more Polynesian became these Leeward Islands of the Society chain – Iles sous le Vent the French call them. By the time they reached Maupiti, last high island in the group, the iron bedsteads, bicycles, and movies were left behind. Here men in loincloths brought in the breadfruit, taro, and papaya; while the women, their breasts bare to the tropic air in the old, healthier way, were busy at their traditional tasks of preparing food and weaving the native fibers into articles for use and export.

In a squall the *Viator* got off course and almost lost Mopelia, the atoll where a tidal wave beached the *Seeadler* and ended the World War I raiding career of Count von Luckner. But when they finally made it safely into the lagoon, the welcome of the natives was almost overwhelming. "Of all places," George Eggleston says, "Mopelia is the spot we have marked for a return visit." It was a place "of childlike people who tend the palms and devote most of their time to dance and song. The people on such a place just cannot change. Every beautiful quality of the Polynesian reaches full flower in such a setting." Change will come, no doubt, but very slowly to such an atoll whose contacts with so-called civilization are few.

You will enjoy the simple, often humorous narrative of this voyage to adventure. It is filled with interesting and useful facts for any who would do likewise; with unabashed appreciation of the sheer beauty of the little, therefore precious, land in this most watery part of the world; and above all with warm regard for the people who are at home here. Nearly half the book comprises a magnificent portfolio of photographs – not the postcard type, nor the "here George and I are waving goodbye to–" type, but pictures that breathe of real places and live people. Many of the scenes and some of the people are inherently beautiful, but the lasting beauty of these photographs is their feeling of having caught moments of actual and continuous living.

The hallmark of the Polynesian is hospitality, the capacity to go "all out" in welcome to the stranger who comes with friendly purpose. And when his deeper friendship is won, the Polynesian gives with it a loyalty, a devotion to the other's interests, that can be inexpressibly moving. This came near to keeping the Huntingtons indefinitely in Tahiti. David, Fritzi, and their 11-year-old son Todd had come in experimental mood, prepared to stay five months if they liked the island life. Tourist accommodations being none too plentiful, yet, they were lucky an absent friend's well-appointed home was available, complete with Tahïtian servants. More congenial to these island people than the role of "servant" is that of "friend-of-the-family." Servility is not in them; but the capacity to give themselves, to those they love, in faithful unmeasured service, is in them to the utmost. When their time had run out, the Huntingtons were entreated to stay in terms that made the decision difficult and leaving exquisitely painful. In short, Tahiti had cast its spell, and once again the spell was as much that of the islanders as of the islands –perhaps more. David Huntington's *Tahitian Holiday* has many good hints. For one, if you would not die of the lotus, have an absorbing interest to fill idle time.

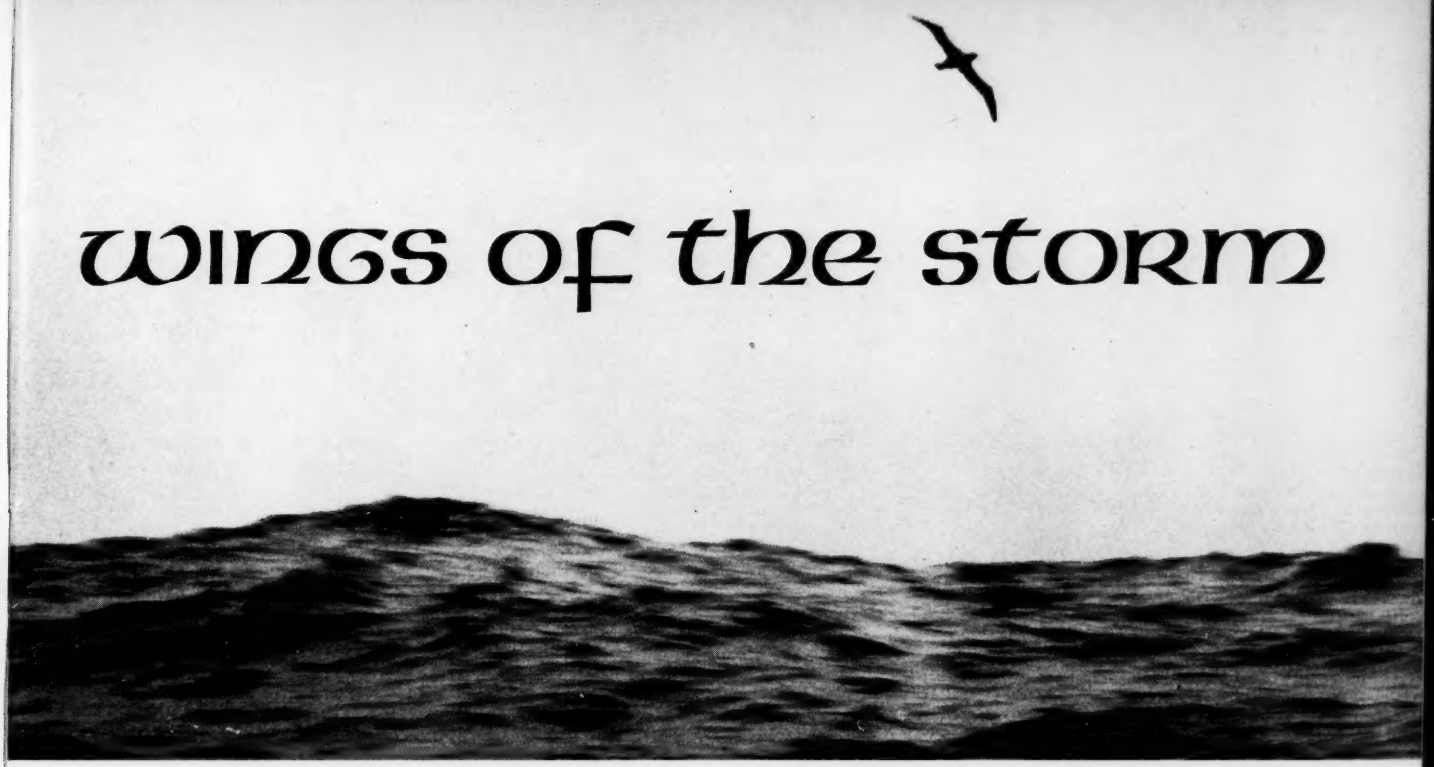
Bengt and Marie-Thérèse Danielsson's anthropological mission might have been accomplished as well on Mopelia; but on the departure of the *Kon-Tiki* crew from Raroia, the bearded Swede had promised a certain chief, who had specially befriended him, that "some day" he would return. Apart from sentiment, when a grant came to him he knew he would find on Raroia the virtually unspoiled Polynesian atoll life he wanted to study and evaluate while it still exists. In his popular book of the experience, *Raroia: Happy Island of the South Seas,* it is plain that this quality of true friendship turned the intimate contact, which might have been cold scientific prying, into rich human experience. Every door and every heart was open because these northerners came as friends first, scientists second. And they shared for 18 months the round of island life: the fishing and copra-making parties, pearl-diving and turtle-hunting; the births, sicknesses, deaths; the magnificent sprees in celebration of almost anything. But just as Europe and America could "engulf" Tahiti, so the materialism of Papeete will in time overrun Tuamotu's atolls. "However long we wrestle with the problem, the conclusion is always the same: [If we ever] return to Raroia, we shall never again find the same happy island."

Thomas Harries-Davis, M.D., is a part Polynesian Cook Islander. His goal after New Zealand medical school was to return to Rarotonga, with his nurse-wife Lydia, to help make "happy islands" through the economic leverage of better health. His 7-year fight with administrative inertia, his success, and the Davis family's battle with the Pacific in the 45-foot *Miru,* which they sailed all the way to Boston and the Harvard School of Public Health, make Tom and Lydia Davis' absorbing book, *Doctor to the Islands.* Their plea is to educate islanders to take care of themselves.

If there is a point to make in conclusion, it may be: that the South Sea Islands do not exist merely as a place for tired or frustrated white men to escape to, but as a place where some of earth's most congenial people live their peaceful lives. D.G.K.

NOTE: For review data on books mentioned turn to p. 32.

WINGS OF THE STORM



ROBERT CUNNINGHAM MILLER photographs by the author

OF ALL THE HABITATS available to birds, the wide and lonely reaches of the open sea might appear to be one of the most inhospitable. Yet there are birds that are just as much at home over vast and turbulent waters as is the red-winged blackbird in a marsh, or a robin on a lawn. So completely are they adapted to the marine environment that they may go weeks or months without sighting land, and indeed have no need of the land whatever except for nesting, which is carried out on remote oceanic islands. If all the land on earth were to be submerged beneath the sea, years after the human race had become extinct there would still be birds winging their way about this global ocean, able to live out their normal life span completely at home in a world of water.

Nine persons out of ten, asked to name a bird of the ocean, would promptly reply "sea gull," or name one of the numerous species of gull. Even as good a sea-faring man as John Masefield might not win a prize on this quiz program, for in "Sea-fever" he refers in one breath to "the gull's way and the whale's way," although the paths of gulls and whales only occasionally and accidentally cross. Gulls by and large are not birds of the ocean, but birds of the shore and even of inland lakes.

To a person spending a summer at the seashore, the gulls, with their attractive plumage, wheeling flight and plaintive cries, are likely to be a memorable part of his seaside experience. But as a matter of fact, and with no disrespect to either, they are a good deal like himself. They like the sea shore and the sea wind, and enjoy beach-combing, but they don't care for too much salt water. An exception is the kittiwake, one of the smallest and most maritime of the gulls. In our book this little gull is really a sea-faring bird.

But when we speak of birds of the open ocean, we mean primarily storm petrels, shearwaters, fulmars, and albatrosses. All belong to a single order, the Tubinares, or tube-nosed swimmers, charac-

terized by nostrils which open well forward along the sides of the beak. This article, in case you haven't guessed, is about albatrosses, and more specifically a common albatross of the North Pacific. The fulmars and shearwaters are essentially just smaller versions of the albatross, and though they are remarkable birds in their own right, to whom we would like to return in future, they will be mentioned here only in passing. But the storm petrels are so different and so remarkable that we cannot pass them up without comment.

The name petrel is derived from that of St. Peter who, according to the Gospel of Matthew (xiv:29), walked on the water. Moreover, the scientific name of the family to which the petrels belong (Hydrobatidae) means the same thing; it is derived from two Greek words meaning "one who treads on water." Petrels are little sea birds, smaller than a robin, who wing their way across some of the stormiest waters of the world. They fly close to the surface of the sea, and look like tiny, storm-tossed paper kites at the mercy of wind and wave. But each time a wave sweeps up and threatens to engulf them, they let down their slender legs with broad webbed feet and skip lightly along the surface of the water. Thus by an amazing combination of flying and skipping that keeps the onlooker breathless with excited admiration they negotiate the roughest seas.

Albatrosses apparently never use their feet in this manner, but they do make a great deal of use of their feet in taking off and landing. When alighting on the water they drop their legs like the landing gear of an airplane, spread out their webbed feet and thrust them forward to act as a brake when they strike the water. When taking off, they face into the wind, spread their long wings, and kick the water vigorously with both feet, once, twice, thrice or more, until they are airborne, leaving a wake of splashes a yard or two apart, visible a few moments until they are blotted out in the endless movement of the ocean.

The lighter the wind, the more difficulty the albatrosses have in taking off, and the harder and longer they have to kick with their feet. Robert Cushman Murphy, in *Oceanic Birds of South America,* recounts an instance in which, in a calm and fog, he encountered numerous albatrosses sitting on the water. As his boat approached them, they would swim away, or splash away kicking with their feet for as much as a hundred yards before taking to the air. This situation was complicated by the fog, so that it is not entirely clear whether it was the calm or the fog that discouraged the birds from taking off. But some observers believe that albatrosses require wind for flight, and are unable to fly in a dead calm.

My own observations do not entirely bear this out, as I have seen albatrosses take off from a calm sea in nearly still air and flap along heavily like oversize gulls. But they do not go far in this manner, and many observers have noted that in calm weather albatrosses give up flying and spend their time sitting on the water. It is an interesting thought that these masters of flight are so much creatures of the wind that they find themselves at

These black-footed albatrosses are waiting hopefully for handouts from ship's galley.

Black-footed albatrosses are good swimmers as well as aeronauts.

a disadvantage without it. In fact, it is not an unreasonable theory that the tropic belt of calms is an important barrier in preventing albatrosses from moving freely back and forth across the equator. The species found in the northern and southern hemispheres are altogether distinct, and only rarely does a stray turn up in the wrong hemisphere.

In 1860 a black-browed albatross, native to the Southern Hemisphere, appeared in the Faeroe Islands, midway between Scotland and Iceland, and was seen regularly in this vicinity for 34 years, until it was shot in 1894.

Most species of albatross are found south of

Black-footed albatrosses rise from the water after taxiing like heavy planes. Note the vigorous use of the feet.

Going ashore to nest, the black-footed albatross finds accommodations on Laysan Island. One of Hawaii's westward chain of Leeward Islands, or Lava Rock Islets, Laysan is part of the Hawaiian Islands Bird Reservation, set aside in 1909, which includes also Nihoa, Necker, Gardner Pinnacles, Lisianski, Pearl and Hermes Reef, and Kure or Ocean Island, outermost, just beyond Midway. (Photograph by Ralph Keating)

the Equator, where the great southern ocean that encircles the globe between Antarctica and Australia, South Africa and South America provides the conditions of almost perpetual wind and swell in which these great birds are most at home. There is no albatross in the North Atlantic, its place there being taken in large part by the fulmar. But the North Pacific has its complement of albatrosses, whose flight is just as impressive as that of the wanderers of southern seas. So much has been written of the flight of the wandering albatross, the largest in its wing expanse of any existing bird, that we are inclined to underrate the other albatrosses, especially those we can find nearer home.

Once there were three species of albatross in the North Pacific – the short-tailed albatross, the Laysan albatross, and the black-footed albatross. The first of these is apparently extinct, through raiding of its nesting sites many years ago for the feather trade. Not a single individual of the short-tailed albatross has been definitely identified in recent years. The Laysan albatross is still moderately common in mid-Pacific, and occasionally strays to the Pacific coast of North America. It is the only white-bodied albatross to be seen off our coast. The black-footed albatross is happily still abundant, and may be seen in off-shore waters all the way from North America to Japan.

This dark brown albatross, with the whitish forehead and rump patch, and occasionally some other light feathers in its plumage, is known to

In typical flight the black-footed albatross glides rapidly down wind *(above)*, then wheels, and rises into the wind *(right)*.

sailors as the "gooney." Its nondescript appearance is unlikely to arouse any excitement in a seasick voyager. But it is really a magnificent bird, its seven-foot spread of wing not being exceeded by any North American birds except the eagles and the California condor. In powers of flight it is second to none.

Its long knife-like wings, with an aspect ratio (ratio of length to width) of around eleven to one, are especially adapted to horizontal gliding, and to maneuvering in the "bumpy" air that occurs over the surface of the ocean when a sea is running. Each wave or swell has an invisible counterpart in the air immediately above it; the albatross rides these waves of air, adjusting instantly to every draft, and taking maximum advantage of the upward component.

Maneuvering (from the Latin via the French, meaning "to work with the hands") is in fact a particularly apt word in describing the flight of the albatross. The bend of the wrist comes a little more than one-third of the distance in from the tip of the wing. The portions of the wing corresponding to the upper arm and forearm provide a gliding surface; but it is the outer section of the wing, corresponding to the human hand, that "feels" the wind and adjusts to every changing gust. There is even a certain amount of finger movement; the alula or bastard wing, corresponding to the human thumb, carries several stiff feathers which can be moved independently to raise or lower a section of the leading edge of the wing.

If you would like to imagine yourself a black-footed albatross, stretch out your arms as far as possible and think of them as being further extended to a total span of seven feet, and transformed into narrow wings, about eleven times as long as they are wide. Next think of your body size being reduced till your total weight is somewhere around seven pounds. Now, except in small matters of detail (no puns, please), you are a working model of an albatross, and ready to take off in a high wind.

While the albatross is the best of all known gliders, we must remember that it is not only a glider, but a combination of glider and light airplane, able to switch on the engine in an instant to pull itself out of any difficulty. I have seen albatrosses glide for long periods of time with scarcely any visible motion of the wings; but under conditions a little less favorable I have seen them swinging in mile-wide arcs astern of a steamer, flapping

the wings once or twice at the end of each long glide. If one attributed human psychology to albatrosses, he might think they were trying to live up to their advance billing by slipping in a few surreptitious flaps now and then when too far away from the ship to be readily observed. Actually they are doing whatever comes most naturally to them. As the wind dies down they flap more and more, and at last, as stated above, they give up flying and settle down on the water.

Black-footed albatrosses are seldom seen closer to shore than fifteen or twenty miles. Occasionally they will venture a short distance into wide inlets, like Monterey Bay, the Strait of Juan de Fuca, or Dixon Entrance. There are no records for San Francisco Bay. They can be seen any day from the deck of a trans-Pacific steamer; but the only way to really get to know them is to go well off shore in a fishing boat or other small craft. Most of the accompanying photographs were taken aboard the M. S. *Catalyst* of the University of Washington Oceanographic Laboratories more than twenty years ago. A few were taken in 1949 and 1950 while the writer was carrying on oceanographic work aboard the U.S.S. *Mulberry*.

When a vessel is hove to for hauling nets or handling oceanographic gear, albatrosses soon settle down on the water near by and wait hopefully for hand-outs from the galley. They have an inordinate appetite for pancakes, either with or without syrup. They feed at the surface of the water, or occasionally turn bottoms-up like the non-diving ducks and reach as far down into the water as they can stretch their necks. They never dive. Although they are wild birds and maintain a good deal of wariness, by judicious baiting they can be lured within camera range.

These hours of fraternizing with albatrosses in a calm sea, over pancakes or crusts of bread, are all too brief and infrequent. When the wind freshens and the sea comes up, and it becomes too rough for oceanographer or fisherman to work, then the albatrosses take to the air and give a truly magnificent demonstration of their powers of flight. In many months at sea over a period of twenty-five years, I have never seen weather so rough that the albatrosses seemed to be in the least difficulty. The cold, wet seafarer aboard a small vessel laboring through heavy seas in a full gale, gazes with admiration and envy at these majestic birds, and inevitably thinks of them in terms of the title of this article.

PIDGIN ENGLISH: S

PIDGIN ENGLISH is neither comic opera patois, unintelligible native gibberish, nor distorted English. Although it is a mixture of several tongues, it has its own rules of grammar, syntax, and pronunciation. English and German words, and those adopted into Pidgin from other languages, were modified because South Pacific natives found it hard to pronounce them correctly.

It might be classified as a trade language, having originated as a means of communication between natives and those who came into the South Pacific to trade, colonize, operate plantations and govern island possessions. The name, a Chinese distortion of the word "business," denotes its purpose. Since Pidgin came into use, it has also been commonly adapted to communication between island groups which speak greatly diversified languages. All in all, it is an important and useful lingua franca used daily by well over a half-million persons.

The only alternatives to the use of this trade language would be to teach English and other foreign languages to South Pacific islanders, or to teach scores of native dialects to those who must converse with them. Pidgin is a less painful method than either.

Pidgin is employed to some extent in a few eastern Asiatic seaports, but the region of general use includes the New Hebrides, the Solomon Islands, the Bismarck Archipelago and eastern New Guinea. Minor differences in vocabulary and pronunciation exist between these groups, but not to the extent of causing great difficulty to those who travel among the islands.

Local native tongues, on the other hand, are so diversified that often several dialects are spoken on a single island. On Bougainville seven distinct dialects used by as many Papuan and Melanesian tribes have been classified by district officers and missionaries. The Nagavisi and other wild tribes living in the interior have still other divergent languages. Along the coast of Bougainville the word "mother" may be *boku, niaka, bauko, ungo, chena, tsinen,* or *nugo*.

Pidgin has been taught in South Pacific mission and government schools for over a half-century, so that a high percentage of the adult islanders speak it or at least understand those who use it. Certain religious publications and government orders have been printed in Pidgin, to the effect

t: South Pacific Polyglot

DONALD H. CLARK

Presenting one side of the controversial question: should Pidgin English be allowed to die, an insulting reminder of old-fashioned colonialism—or kept as an indispensable lingua franca of the island world?

that many of the more learned coast-dwellers can read the language.

Over 80 per cent of the words in Pidgin vocabularies are taken from English, often quite corrupted. Most of the others are from native tongues, or from German or Malay. In the New Hebrides, a condominium of France and Great Britain, many French words are added.

The word *gammon* is a corruption of "German," meaning to falsify or deceive. From the German comes *mark,* which means shilling. From *heraus* comes *rouse,* with a meaning of removing or throwing out. "Rouse-im skin blong yam" is an order to peel that vegetable. The Pidgin word for blood is *blut,* unaltered German.

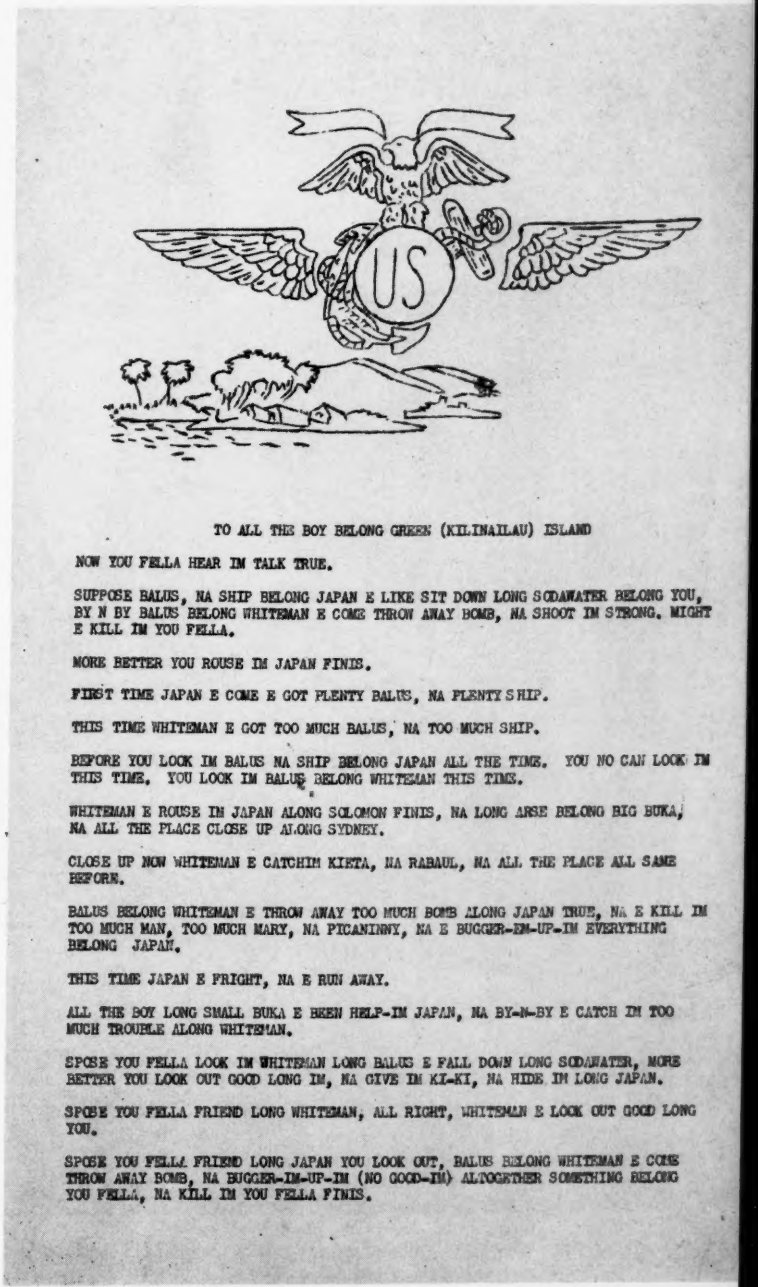
The Malay words for mosquito net – *klamboe,* vegetables – *sajoer,* and milk – *soesoe,* have been adopted into Pidgin as *kalumboo, saiool,* and *soo-soo.*

Much English slang is used. *Calaboose-im* means to imprison, and *bugger-up finish* means broken or entirely ruined. *Humbug* is to fail, *savvy* is to know, and all children are *pickaninny mary* or *pickaninny man,* depending on sex. Also many words which are not in English dictionaries or used in the best drawing rooms have been injected into Pidgin by traders and seafaring men, much to the disgust of South Sea mission people. When those earnest and devout persons translate the Scriptures or religious hymns into Pidgin, they eschew the vulgar or profane words.

These missionaries, incidentally, normally employ Pidgin in preaching and in conversing with the aborigines, although some of the more ambitious acquire a speaking knowledge of native dialects. Methodists, Catholic Marists, Seventh Day Adventists and members of the South Seas Evangelical Mission often translate into Pidgin and print portions of the Bible or biblical legends. In New Guinea, a Catholic Mission published a Pidgin songbook which contains a native version of "Home, Sweet Home":

> Ples blong mi i namberwan,
> Mi laikim im tasol.
> Mi tink long papa, mama tu,
> Mi krai long haus blong ol.

In general, Pidgin is quite expressive and more than a little descriptive. The word for dust is *smoke blong ground,* hair is *grass blong head,* and



TO ALL THE BOY BELONG GREEN (KILINAILAU) ISLAND

NOW YOU FELLA HEAR IM TALK TRUE.

SUPPOSE BALUS, NA SHIP BELONG JAPAN E LIKE SIT DOWN LONG SODAWATER BELONG YOU, BY N BY BALUS BELONG WHITEMAN E COME THROW AWAY BOMB, NA SHOOT IM STRONG. MIGHT E KILL IM YOU FELLA.

MORE BETTER YOU ROUSE IM JAPAN FINIS.

FIRST TIME JAPAN E COME E GOT PLENTY BALUS, NA PLENTY SHIP.

THIS TIME WHITEMAN E GOT TOO MUCH BALUS, NA TOO MUCH SHIP.

BEFORE YOU LOOK IM BALUS NA SHIP BELONG JAPAN ALL THE TIME. YOU NO CAN LOOK IM THIS TIME. YOU LOOK IM BALUS BELONG WHITEMAN THIS TIME.

WHITEMAN E ROUSE IM JAPAN ALONG SOLOMON FINIS, NA LONG ARSE BELONG BIG BUKA, NA ALL THE PLACE CLOSE UP ALONG SYDNEY.

CLOSE UP NOW WHITEMAN E CATCHIM KIETA, NA RABAUL, NA ALL THE PLACE ALL SAME BEFORE.

BALUS BELONG WHITEMAN E THROW AWAY TOO MUCH BOMB ALONG JAPAN TRUE, NA E KILL IM TOO MUCH MAN, TOO MUCH MARY, NA PICANINNY, NA E BUGGER-EM-UP-IM EVERYTHING BELONG JAPAN.

THIS TIME JAPAN E FRIGHT, NA E RUN AWAY.

ALL THE BOY LONG SMALL BUKA E BEEN HELP-IM JAPAN, NA BY-M-BY E CATCH IM TOO MUCH TROUBLE ALONG WHITEMAN.

SPOSE YOU FELLA LOOK IM WHITEMAN LONG BALUS E FALL DOWN LONG SODAWATER, MORE BETTER YOU LOOK OUT GOOD LONG IM, NA GIVE IM KI-KI, NA HIDE IM LONG JAPAN.

SPOSE YOU FELLA FRIEND LONG WHITEMAN, ALL RIGHT, WHITEMAN E LOOK OUT GOOD LONG YOU.

SPOSE YOU FELLA FRIEND LONG JAPAN YOU LOOK OUT, BALUS BELONG WHITEMAN E COME THROW AWAY BOMB, NA BUGGER-IM-UP-IM (NO GOOD-IM) ALTOGETHER SOMETHING BELONG YOU FELLA, NA KILL IM YOU FELLA FINIS.

American planes dropped mimeographed Pidgin English pamphlets over Nissan, Tauu, and Kilinailau islands during World War II, telling the islanders Japan was losing the war and that downed allied airmen should be well cared for – or else!

"Past time me fella e no strong. Now me fella strong finish na America e come helpim me fella. . . ."

GUVMAN I SALIM TOK LONG OL BOI BUKA

LONG YAR BIPO, JAPAN I KAM PAIT SITIL LONG YUMI NA OL I KISIM NUKINI NAP LONG LAE NA SALAMAUA.

PAS TAIM MIPELA I NO SITRON. NAU MIPELA SITRON PINIS NA AMERICA I KAM HALIPIM MIPELA. SOLDIA BILOG YUMI I RAUS IM PINIS OL JAPAN LONG LAE NA SALAMAUA NA KARIM PAIT LONG HAP BILOG MADANG. SOLDIA BILOG AMERICA I KOSUA PINIS LONG BIKBUKA, LONG PURUATA. NA WOKIM PLES BALUS LONG TOROKINA. BALUS BILOG YUMI NAU LUKAUTIM SIP NA LANIS BILOG JAPAN BILOG DAUNIM, NA LIKLIK TAIM JAPAN I ANGRI, I NOGAT KAIKAI.

KAIKAI BILOG YUPELA DASOL. YUPELA KILIA LONG JAPAN NA KOHAIT GUT LONG WOK LONG BUS. YUPELA WONTAIM MERI NA PIKININI NA PIK, OL I KOHAIT GUT LONG BUS NA WEITIM MIPELA.

KIAP BILOG YUPELA I STAP WONTAIM SOLDIA BILOG YUMI. YUPELA NOKAN PRET. GUVMAN I SAVI JAPAN I PULIM PLANTI BOI BILOG HALIPIM OL. MASKI, YUPELA NOGAT TOROVEL LONG DISPELA PASIN, TOROVEL LONG JAPAN DASOL. GUVMAN I SORI TUMAS LONG YUPELA, OLTAIM TING LONG YUPELA. YUPELA KOHAIT GUT NA WEITIM TOK BILOG GUVMAN.

GUVMAN I SALIM DISPELA TOK.

1. Dispala masta i gifim pas long yu i peren bilong Gavman.
2. Balus bilong en i bagarap tru nau yupala mas lukaut gut long en inap long masta ikamap long mipala gen.
3. Im ino save gut long tok pisin nau yupala mas ting long ol liklik samting bilong en.
4. Gifim wara bilong dring olsem kulau.
5. Gifim kaikai, olsem kokuruk nau kiau nau banana mau nau popo nau ol gutpala kaikai.
6. Sapos Japan ikam kilostu yupala baitim masta nau giamonim ol Japan.
7. Wampala boi igat taunam olsem kalambo i gifim long masta.
8. Sapos piles ino gat auskiap olrait makim wampala mipala aus bilong im i silip. Wokim gut bet bilong im olsem pasin bilong wok bus.
9. Sapos masta ino inap long wokabaut yupala mekim bet nau karim.
10. Dokta boi lukaut long sor bilong en.
11. Sampala boi i wokabaut wantaem long masta nau karim liklik samting bilong en. Yupala bringim long kiap no long ol masta no long ol soldia bilong Inglis.
12. Biaen igat pe ikamap long ol dispala samting.
13. Yupala kisim pepa na pensil long misin boi bilong yupala na masta i wokim pas nau gifim long yupala. Taem kiap ikamap gifim pas long kiap nau kisim pe. Sapos Japan ilaik kamap haitim pas gut inap long ol ino kan lukim.

GAVMAN I TOK YUPALA MAS ARIM.

"This fella master e givim pass long you e friend blong Government.
. . . GOVERNMENT E TALK YOU FELLA MUST HEARIM."

whiskers are *grass blong face.* A typewriter is *machine blong write* and a flashlight is *lamp walkabout.* Musicians will be intrigued by the Pidgin for violin, which is, *little pella* (fellow) *bockis* (box), *you scratch-im bel* (belly) *i krai out too mas.*

The days of the week are, *One-day, Two-day, Three-day, Four-day, Five-day, Taraday* and *Sunday.* Many nautical terms are used for objects and actions, as *capsize-im* for the action of pouring. Some Pidgin words have more than one meaning, although related. Thus *balus* means bird, but was also adopted as the word for airplane when fliers came into the South Pacific.

Native pronunciation of English words must be studied in order to understand spoken Pidgin or to speak it so that it is readily understandable. Islanders insert vowels between adjacent consonants, as they are able to pronounce but one consonant at a time. Thus *stop* becomes *si-top. F* is pronounced as *P,* and *H* is silent. Hence *half* becomes *'ap.* The *sh* sound is changed to *s,* so that finish becomes *pinis.* The letter *m* is often placed before words starting with *b,* and *n* before words starting with *d* or *g.* Examples are *mbook* and *ngood.*

Few realize the extent to which Pidgin was used by our armed forces in the South Pacific during World War II. Each island in our zone of occupation had a native population which spoke one or more of the twenty-odd difficult dialects, but among whom most of the adults could converse in Pidgin. Only a few mission-educated islanders could speak any English or French.

Australians and British who had lived in the South Pacific were most helpful to us in the task of compiling makeshift English-Pidgin English dictionaries. Fliers, who might be shot down or forced to land in areas where we had no troops, were supplied with elementary phrase books which saved many American lives. Intelligence officers—other than those who were foolish enough to discredit native sources — used Pidgin to gather much information regarding enemy strength and movements, as well as accurate geographical details.

The one difficulty in securing information regarding enemy strength, was the limitation of Pidgin and of some islanders' minds in expressing large numbers. Melanesians counted by means of their body digits, so that *One-pella hand* meant five, *Two-pella hand, one-pella foot* indicated fifteen, and *One man* (all of the fingers and toes), totaled twenty. Beyond that — even into the hundreds and thousands — was *plenty too mas.*

Tanni, a Choiseul Islander, flew with an American medium-bomber squadron to point out a Japanese radio installation which had been directly responsible for scores of Japanese interceptions of allied bombing missions by reporting the planes as they flew north "up the slot." Tanni pointed out the invisible jungle-covered target which scores of air photos had failed to disclose. The bomber crews dropped where Tanni told them — in Pidgin English — and destroyed both the radio installation and its entire staff.

One effective use of Pidgin by our Intelligence force was in compiling warning pamphlets which were printed or mimeographed in that language, and which were dropped from planes over isolated islands in the Japanese-occupied zone. Scores of our fliers had been marooned on these islands by plane failures or by combat disablement. Crews of wrecked bombers would often drift for days on rubber rafts until prevailing ocean currents carried them within sight of such atolls.

The purpose of the pamphlet-drops was to convince the natives that they must rescue and care for these men. The language had to be abrupt and forceful, as the islanders have a great respect for military strength and an equal contempt for weakness.

The pamphlets stated that Japanese power was rapidly declining as American troops and planes poured in to reinforce the Australians and British. If the islanders rescued our castaways, fed them, and helped them to reach safety, they would be

In World War II our troops, such as these landing at Laiana, New Georgia, were briefed in Pidgin.

rewarded. If they helped the Japanese or gave them information regarding our movements, or if our castaways were abused or neglected, bombing planes would come to kill them and to destroy their villages.

To prove that these were not idle statements, a few atolls were heavily bombed in proved cases of native disloyalty to the allied forces.

Almost invariably there would be mission-trained "tultuls" or interpreters in each village who could read Pidgin and convey the messages to others. The report of a two-plane pamphlet-dropping mission over Tauu Island, northeast of Bougainville, reads,

LOCATED HARHAKU VILLAGE TAUU ISLAND, CIRCLED AND DROPPED LEAFLETS FROM TREE TOP HEIGHT RIGHT IN CENTER OF VILLAGE. SECOND PLANE SAW NATIVES READING PAMPHLETS DROPPED BY FIRST PLANE, GESTICULATING WILDLY.

Aside from military use, one of the important commercial functions of Pidgin has been in the operation of copra plantations throughout Melanesia. Many of these cover enormous acreage, and all of them rely on native labor for clearing, planting, cultivation, harvesting, chopping and drying. Men are recruited from native villages, usually on three-year contracts, and the sole means of instructing them in their work is Pidgin English.

The same applies to a lesser extent to the hundreds of Melanesians who are hired as deck-hands and as pilots of schooners which trade and haul freight throughout the islands. All orders to native crews are in Pidgin.

Webster's Collegiate Dictionary defines Pidgin English as, "The jargon used as a lingua franca between foreigners and the Chinese." Funk and Wagnall's definition in their Standard Universal Dictionary is, "A barbarized English used in Chinese and other Oriental commercial centers —." Both definitions are inaccurate and quite misleading. Pidgin is altered but not "barbarized" English, and it is not a jargon. It is used to a limited extent on the China coast, but its main function is that of a standard trade language for the far-flung islands of Melanesia.

It's a valuable and practical trade language, without which trade, industry and government in the South Pacific would be extremely difficult.

The CALIFORNIA WHALING ROCKET and Patent Bomb Lance

JOHN E. CUSHING, JR.

WHILE COLLECTING information on the shore-whaling stations of California, the author "discovered" a romantic application of the rocket principle, made by Pacific Coast whalers, which appears to have escaped general notice. This application took the form of an instrument termed the California Whaling Rocket and Patent Bomb Lance, illustrated in the accompanying figure. The legend for this figure describes the mechanism of the rocket in detail. This is briefly summarized by stating that the whaling rocket acted as a combined harpoon-gun and bomb-lance, fastening a line to the whale while killing or "disgusting" it (to use a whaler's term). The advantage of this rocket is immediately apparent when it is realized that the recoil of the usual harpoon and bomb-lance guns was so tremendous as to have been a well known cause of fatalities among whalemen.

The California Whaling Rocket and Patent Bomb Lance, in use during the later 1800s, was manufactured by a San Francisco firm, Fletcher, Suits and Co. It has been stated that it was apparently an outgrowth of a similar device patented in 1861 by Thomas W. Roys of Southhampton, N.Y., but this point is not certain, as will be brought out below.

Dr. F. M. Setzler, Head Curator of Anthropology of the Smithsonian Institution, (who kindly supplied several key references to the writer) has sent copies of correspondence relating to the attempts of the Smithsonian to obtain an example of the whaling-rocket. This correspondence was between Dr. Spencer W. Baird, Secretary of the Smithsonian, and Mr. C. D. Voy, who apparently was an amateur archeologist and naturalist. Mr. Voy, in 1881, actually was able to secure a second-hand Whaling Rocket and Patent Bomb Lance from Mr. Fletcher. This was "painted up so that it looks as good as new" and shipped off to Secretary Baird via the Alaska Commercial Co. of San Francisco. However, Dr. Setzler states that, although given an accession number, the rocket was never catalogued and there is no evidence that it ever reached the Smithsonian.

An article describing the use of the Whaling Rocket was published by Mr. Voy in *The American Naturalist* for 1880 (*14:* 292-295). This is reproduced below, with its illustration of the Whaling Rocket copied from a Government report, and one of a party of whalers attacking a whale we have added from the same source. The title of the article appears either not to have been

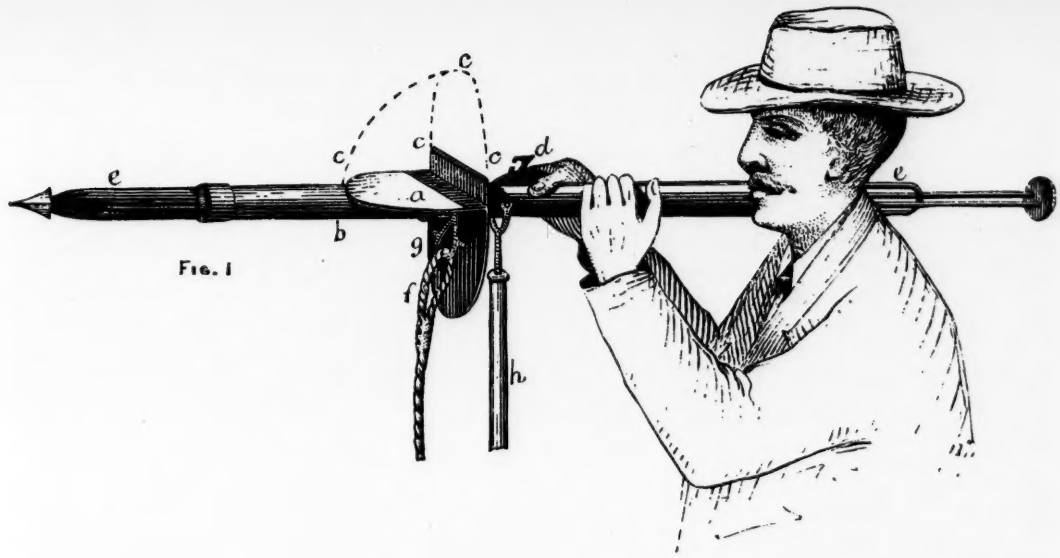


Fig. 1

Fig. 3

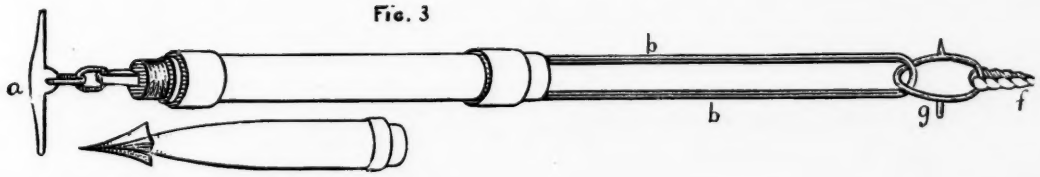


Fig. 2

California Whaling Rocket and Patent Bomb Lance.—Plate 199, *The Fisheries and Fishery Industries of the United States* by George Brown Goode, vol. II, sec. V. U.S. Commission on Fish and Fisheries, Washington, 1887. The projectile consists of a cast-iron shell (Fig. 2), and a rocket with a loop extension (Fig. 3). The shell, 15 inches long, is detached to show the toggle, which is fastened by two links to the projecting end of the rocket. The bomb is filled with a peculiar composition said to be known only to the inventors. The rocket is of brass, the loop extension (bb) of wrought-iron; total length, 66 inches, length of toggle (a) 10 inches. When the bomb with its rocket attachment (Fig. 3) is loaded in the gun (Fig. 1) which is partially supported by a standard (h), the link (g), with the tow-line (f) attached, hangs from the muzzle. The adjustable flange (1a) is parallel to the gun when the gunner takes aim. A pistol (d) fires the combustible material in the rocket-chamber, and the issue of gas from the rear of the rocket propels the apparatus. In flight the shackle (g) and the tow-line (f) are as shown in Fig. 3. When the bomb explodes in the whale the toggle (3a) and chain are released to hold the apparatus fast in blubber or flesh. The instant the gun goes off, the flange (1a) is thrown up in a vertical position following the path shown by dotted lines (cc) to protect the gunner's eyes. (Original caption revised)

very carefully chosen, or to apply to a longer paper from which the present one has been extracted:

TWENTY-SIX DAYS AT SEA, IN AN OPEN BOAT, CRUISING FOR WHALES. — We left San Francisco on a small steam propeller known as the *Rocket;* length about thirty-five feet, eight feet beam, and about five and a-half tons register.

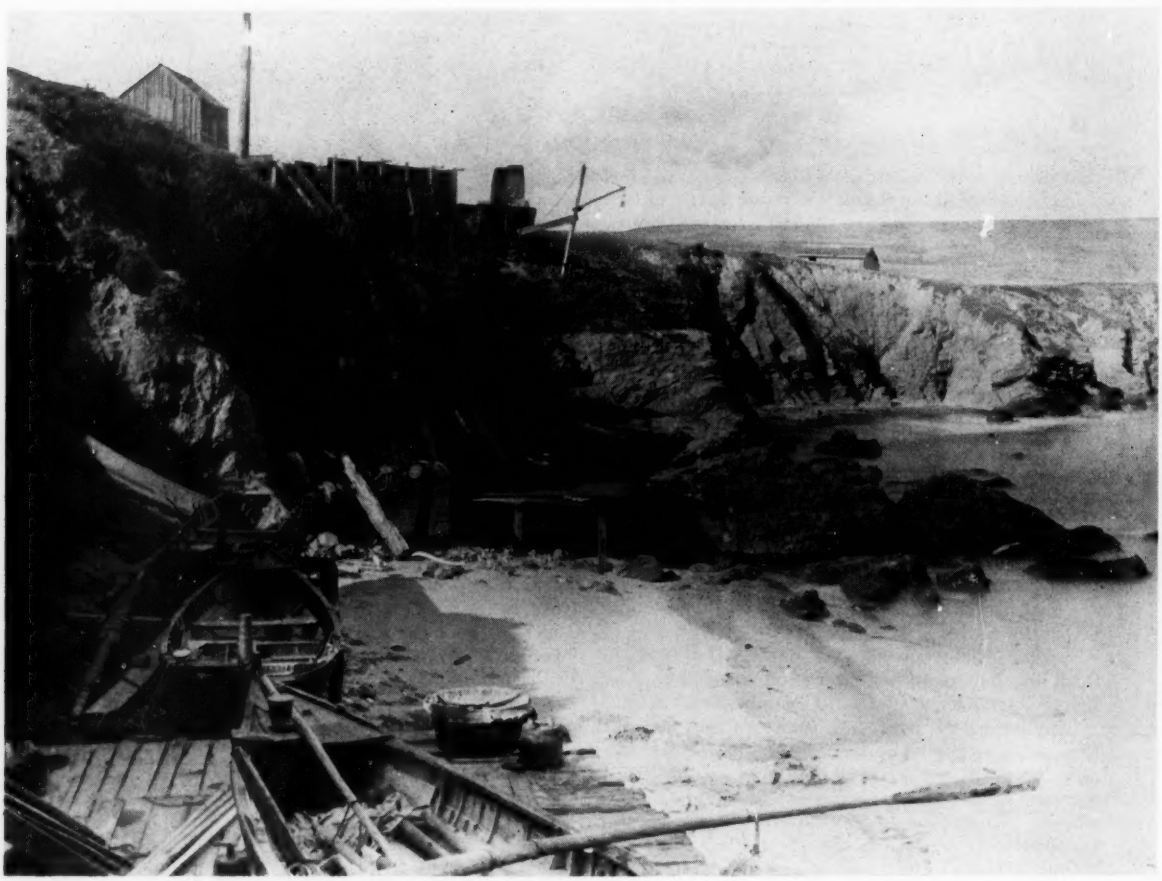
The day we left being fine, we had a very pleasant trip as far as Point Reyes, which is about thirty-five miles north of San Francisco, but saw nothing of importance on the way, except now and then numerous albicore [*sic*] and the porpoises sporting in the sea. We anchored in Drake's bay for the night. Early on the following morning we steamed up and took a cruise outside, and in a few hours heard the familiar sound, "There she 'blows,' " and the captain, with spy-glass in hand, answering, "Where-away?" with the answer, "Just on the lee bow, about half a mile ahead!" Getting everything in order, we steered for him, and soon saw several whales swimming very fast and going northwards. Now one approaches which proves to be a sulphur bottom whale (*Sibbaldius sulphureus* Cope), seventy-five to eighty feet long, just under the bow of the boat, in fact almost too close for a shot. The captain fired one of the well-known Fletcher, Suits & Co. California whaling rockets, and patent bomb lance. This apparatus consists of a gun-metal cylinder filled with a peculiar composition made only by themselves, to which is attached, in front, a bomb with a barbed point; inside the bomb [Fig. 2] is an explosive charge

and a chain toggle, which is released by the bursting of the shell on entering the whale; an iron shaft is attached to the rear end of the rocket [as shown in Fig. 3] through which the whale line is spliced, this also shows the chain toggle after it is released, so that when it is inside of a whale it has a sure hold. In some experiments with these bombs on the beach before starting, one carried a whale line, of two and a-half inches in circumference, about sixty fathoms, which shows what power they have, since a bomb and twenty fathoms of line weigh about fifty-five pounds.

These are generally fired from the bow . . . [another type of gun is shown in the scene on page 15]. Fig. [1] gives an enlarged view of the complete apparatus before being fired. The hinged flange is thrown up by the rocket passing out, protecting the face from injury. At a distance of from twenty to thirty fathoms it is almost sure to explode and kill the whale, if it hits him, but in our case, we being too close to the whale, about ten feet distant, the bomb went through him, just abaft of the flukes, and bursted on the outside, leaving the toggle on the outside of him; we were now fast, and the whale towed the propeller, which would, perhaps, weigh ten tons, coal and all, for three or four hours, with from twenty to forty fathoms of whale line, sometimes at the rate of ten miles an hour, although we were frequently backing under a full head of steam. This, if we were going ahead and nothing to hinder, would carry the propeller about ten miles an hour, thus showing the immense strength of the whale. This species of whale is seldom attacked by the whalers on account of its being so much swifter than any other whales known. We held on to him as long as we could, hoping he would soon give up, as he was going so fast and at such a distance from us, we could not get another shot at him, and it being near sundown, and we over ten miles from land, we commenced to shorten up the line as much as possible intending soon, if he did not give up, to cut the line and let him go. While doing so the line parted, and we lost about ten fathoms and the rocket. Thus ended one of the fastest and most exciting rides I ever had behind one of the monsters of the deep.

We now steamed towards Drake's bay, where we anchored for the night.

On a subsequent day we went out and saw numer-



Whaling station near Pescadero on the California coast in the early 1890s. California had several stations, one operating in Monterey Bay as late as 1926. (From Randolph Brandt, courtesy San Francisco Maritime Museum)

"Boat fastened to whale by harpoon and line; killing the whale with bomb-lance." (Plate 200, from *The Fisheries and Fishery Industries of the United States*, vol. II, sec. V, 1887, after a painting by J. S. Ryder)

ous sulphur bottoms, but all swimming fast and going northward. We could scarcely approach them, but finally firing a shot at one, we missed him. We did not get any more chances at them during the day, and at night returned to Drake's bay.—C. D. Voy.

In addition to Voy's account, the use of the rocket gun is referred to in U. S. National Museum Bulletin No. 27, 1884. This large bulletin consists of "Descriptive Catalogues of the Collections sent from the United States to the International Fisheries Exhibition, London, 1883, constituting a report upon the American Section." While the rocket gun described by Voy was not in the collection, a very similar model is catalogued (56327) with the following remarks: This ". . . rocket gun was patented January 22, 1861, by Thomas W. Roys, of Southhampton, New York, from which the California whaling-rocket is an outgrowth. Mr. C. D. Voy, of California, tells me that it was used, as far as the apparatus was concerned, very successfully on the steamer 'Daisy Whitelaw,' and also on the 'Rocket' off the California Heads, but owing to the scarcity of whales (finbacks) in that locality, the enterprise was a failure. Mr. ——— Wilson, of Sitka, Alaska, tells me that it is also used successfully, from the deck of a small steamer, by the Northwest Whaling Company in the capture of finbacks and humpbacks on the southern coast of Alaska."

Roys' rocket is no longer in the Smithsonian Collection, the card bearing the cryptic notation "Lent Bur. Fish. for L. P.X. Feb. 1904." Inquiry of the U. S. Patent Office has failed to reveal any evidence of Roys' patent referred to above and the catalogue account suggests some ambiguity in the generic relationships between Roys' rocket and the California whaling-rocket (apparently unpatented). The search for Roys' patent has revealed that he did patent a "Harpoon" or "whale-raiser" in 1862. This harpoon, ten feet long and weighing some two hundred pounds, was designed to fall down a harpoon line and make fast to a dead, but sunken whale, which could then be raised by a ship's windlass. Whether or not the "whale-raiser" was actually used is not certain.

While apparently an instrument of promise, the whaling-rocket fell into disuse with the slump in whaling that had become widespread at the turn of the century. As far as the author is aware it has not been revived in modern times.

NOTE: In his new book *The Great Story of Whales* (reviewed in this issue), Georges Blond provides us with a calamitous but tantalizing footnote to our author's conclusion. In telling of the Norwegian Svend Foyn's invention, his famous whaling gun, Blond describes other experiments, concluding with this (p. 198): "Two Americans, Captain Roy [*sic*] and the firearms expert, Lilliendahl, had invented a weapon which anticipated quite accurately the bazooka used during World War II. It consisted of a tube open at both ends and ejecting a rocket that carried the harpoon and its line. But they persisted in testing it aboard small whalers. Eventually they lost heart. One of the experimenters died a horrible death from it in Mexico." And there he leaves us!—EDITOR.

MIDDLE AMERICAN MOSAIC: Crossr

LILLIAN ROBINSON PÉREZ

SPEAK OF HIGH CULTURES in America before the Conquest, and the Aztec, the Maya, and the Inca come to most minds. These three names stand for the summits of American Indian civilization as we know it; their centers are known and the areas of their influence are fairly well defined. But on their margins, and especially over the long span of Middle America between Yucatán and Peru, the archeological picture is still confused and hazy. It is a mosaic of various inlays and veneers whose proper relation to the whole has yet to be revealed. In this nebulous area of cultural fragmentation and overlapping lies coastal Ecuador.

Along the Pacific on both sides of the Equator, in Manabí south of the line and in Esmeraldas north of it and extending to Tumaco in Colombia, Ecuador may claim a "cultural inlay" which is one of the most fascinating, mysterious, and esthetically satisfying of those yet brought to light.*

*The German archeologist Max Uhle, who explored this territory, and the Ecuadorian historian Archbishop Gonzalez Suarez, both held an opinion about the affinities of the Manabí and Esmeraldas cultures which authorities are not inclined to take seriously. Uhle and Suarez were struck by the resemblance of objects from northern Manabí and Esmeraldas to similar objects from the Mayan area. In some of his writings Uhle has postulated a cultural connection between the two areas. It is true that the resemblance of the small anthropomorphic clay figurines found in Esmeraldas to those of the Mayan area — particularly the type from the island of Jaina, Campeche, belonging to the Puuc or neo-classic Maya period (A.D. 987) — is very striking even to the inexperienced eye. There are no definite or final proofs, however, that this Ecuadorian culture is derived from the Mayan, or vice versa. Dr. John H. Rowe, professor of anthropology in the University of California, says: "There are some similarities between the art of Es-

Replica in clay of an ancient dance
religious festivals, La Tolita. (Wu

ossroads of Culture on Ecuador's Coast

n ancient dance mask probably used in
, La Tolita. (Wuth Collection, Quito)

PHOTOS BY BODO WUTH

Historical accident and centuries of isolation kept the archeological wealth of Ecuador's Esmeraldas province hidden from the outside world until about 1877, the date of an expedition by the German geographer and geologist, Theodor Wolf. Then beginning in 1906 the American, Professor Marshall H. Saville, personally headed the six or so "Marie Antoinette Heye Expeditions to Esmeraldas." Saville's work made the Heye Museum of New York the richest of all in gold, silver, copper, stone, and clay objects from this area. Other excavations in this field were undertaken by Jijón y Caamaño, Quito aristocrat and painstaking, self-made archeologist.

The northern Manabí and Esmeraldas culture characterizes a small area of the Ecuadorian Pacific coast, but its vestiges are not always uniform and vary slightly from one river valley to the next. On the whole it is distinctive, and does not repeat itself, at least to present knowledge, in any other part of Ecuador (although a relationship between

meraldas and that of various parts of Mexico and Central America, but . . . we do not yet know what they mean. We do not know yet whether the Esmeraldas material is earlier, contemporary with, or later than the comparable Mexican and Mayan materials, so we can discuss neither the possibility of influence nor the direction in which it went" [letter to the editor]. A great deal of study is needed to settle this and similar questions.

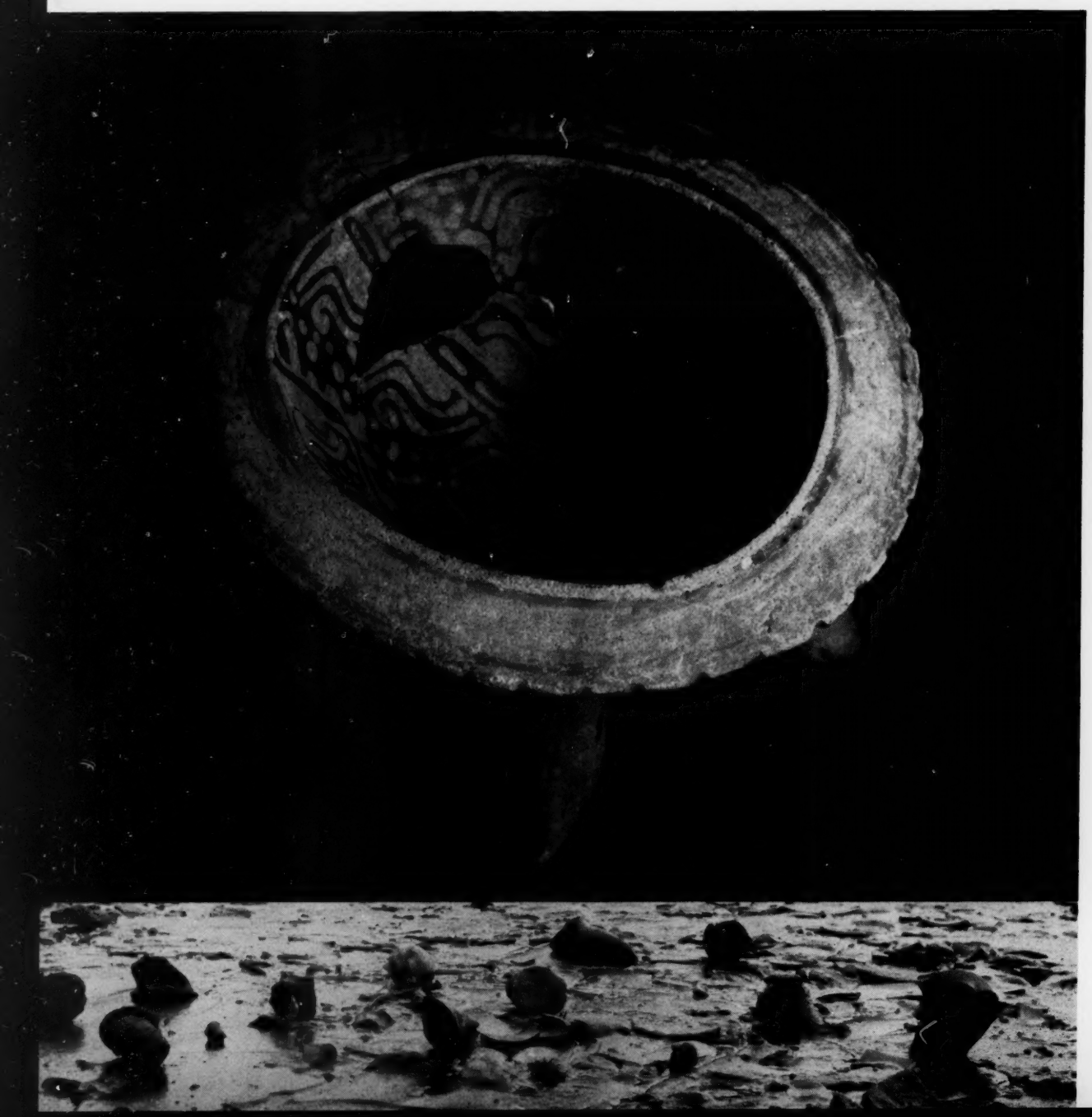
[Dr. G. H. S. Bushnell, curator of the Cambridge University Museum of Archaeology and Ethnology, who has worked on the coast of Ecuador, shares with Uhle, Jijón, and others, the belief in some influence from the north, but considers that it may have come by sea from Central America, not from Mexico. His criticism of the extreme view is contained in his book, *The Archaeology of the Santa Elena Peninsula in South-west Ecuador* (Cambridge, 1951). See under REVIEWS in this issue.—EDITOR.]

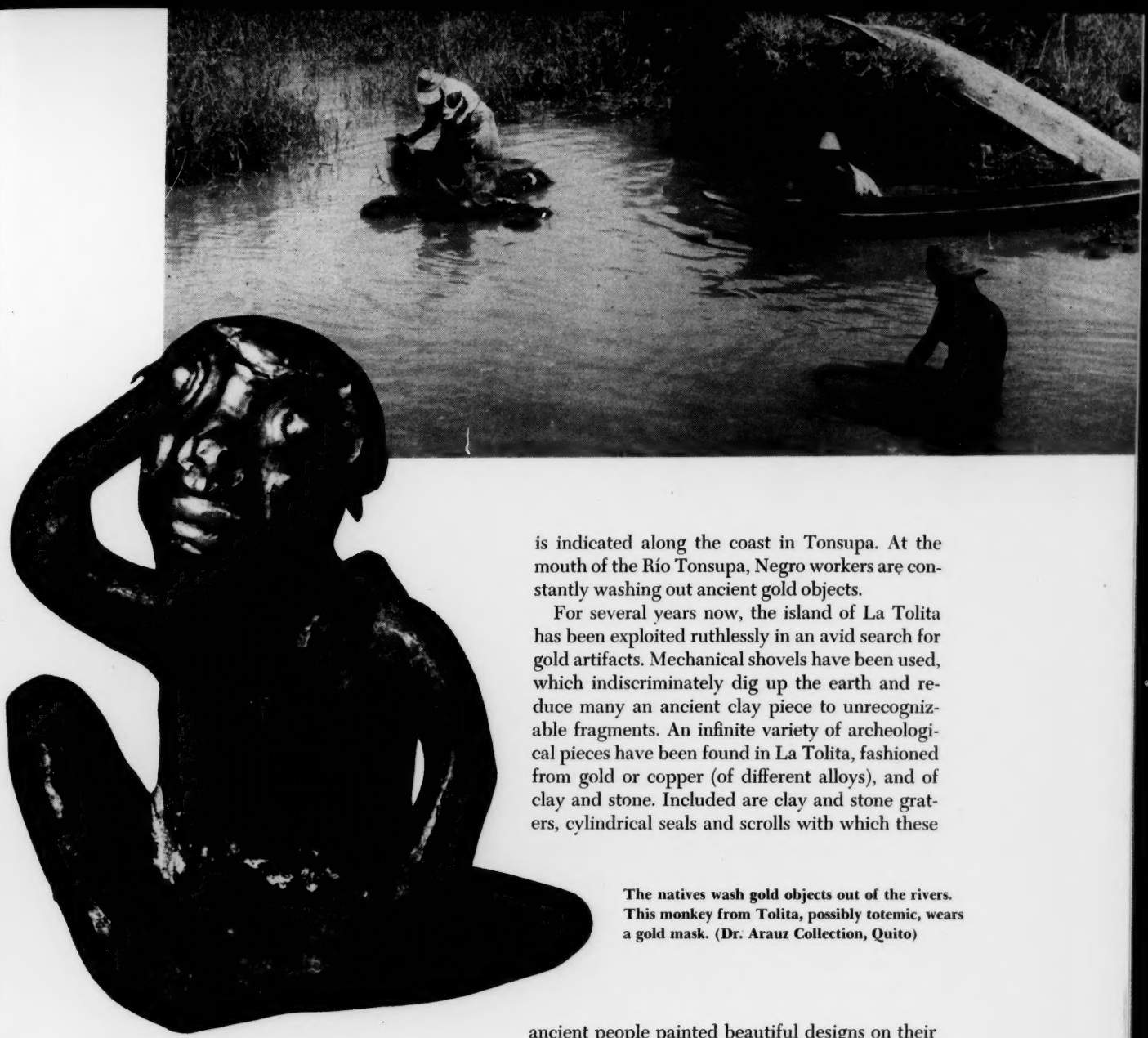
Manabí and the Santa Elena Peninsula just to the south has been established). Does this mean that the region was perhaps an ancient maritime colony of settlers who came by sea? Some archeologists accept this possibility.

The Esmeraldas archeological sites are scattered along the coast, the islands, and river banks of the province, from the Colombian area of Tumaco in the north to the province of Manabí in the south. The stronghold of the culture seems to have been the Santiago River area with the islands of Los Castillos, Limones, Pachangal, and La Tolita at the river's outlet, and the sites of Borbon, Maldonado, and Concepción on the river's banks.

The tiny island of La Tolita may have been the site of a prehistoric city, or, if the ancient Esmeraldas peoples shared with their coastal neighbors the practice of erecting places of worship to their gods on the islands, La Tolita may have been a place consecrated to the dead. For here there are

Tripod plate decorated with a negative painted design, La Tolita. (Ferdon Collection, U.S.)
***(Below)* Ancient pottery washes out of the tidal mud and sand in Ecuador's coastal sites.**





The natives wash gold objects out of the rivers. This monkey from Tolita, possibly totemic, wears a gold mask. (Dr. Arauz Collection, Quito)

25 or 30 large burial mounds or *tolas,* and other lesser mounds, distributed like hillocks on the flat pasture land of the island – from these the island got its name, in the diminutive form, *Tolita.*

Two American archeologists, Ferdon and Corbett, making a survey in Esmeraldas about 10 years ago, located another "city" between Ostiones and Rioverde, about three miles long and parallel with the shoreline. It is believed to contain a wealth of archeological relics. Another such site is indicated along the coast in Tonsupa. At the mouth of the Río Tonsupa, Negro workers are constantly washing out ancient gold objects.

For several years now, the island of La Tolita has been exploited ruthlessly in an avid search for gold artifacts. Mechanical shovels have been used, which indiscriminately dig up the earth and reduce many an ancient clay piece to unrecognizable fragments. An infinite variety of archeological pieces have been found in La Tolita, fashioned from gold or copper (of different alloys), and of clay and stone. Included are clay and stone graters, cylindrical seals and scrolls with which these ancient people painted beautiful designs on their skin; clay figurines both anthropomorphic and zoömorphic; funeral urns; pottery decorated with fine, delicate paint, and a series of lines and dots executed by a negative process of black paint on a white background; pottery pieces with red curved bands (found in the Teaone river valley); and sacrificial plates and cups.

Among the gold objects are breast plates of different designs; gold necklaces and beads of many styles; monstrous ear plugs like spools, which they wore on their perforated ear lobes patiently distended from childhood onwards; nose rings and earrings of many designs; gold nails; slender gold

Fashions in heads.

(Left) **Human or idol's head with a grotesque bird-beak profile, from La Tolita. (Mueller Collection, Quito)**

(Right) **Seated clay figurine. (Dr. Arauz Collection, Quito)**

(Inset) **So-called "classical" type of clay head from the island of La Tolita. (Folklore Collection, Quito)**

pins with decorated heads; tweezers to pluck the hair; fish hooks; and miniature—infinitesimal—gold spoons whose use is still unknown (among the theories are that these were used to clean wax from the ears, and even to deal minute doses of poison!). Mined, unworked gold has also been found buried in clay receptacles.

The most striking and frequent relics found in Esmeraldas are the endlessly varied clay heads, which are a human portrait gallery. Some are fashioned with smooth deformed craniums, others are decorated with the most elaborate headdresses belonging probably to the priestly class, to ceremonial dancers, or the high military caste. These heads, as well as the concave molds in which many were made, are found isolated, either broken off from the rest of the anthropomorphic figurine, or fashioned separately by the ancient potter – faces of a lost race whose prevailing characteristics were: slightly slanted almond shaped eyes with the epicanthic eye fold, delicate beaked noses, thin, somewhat cruel yet sensitive lips, and the monstrous mitre-shaped heads, reproduced in clay with amazing artistry and lifelike expression.

Often one finds archaic clay figure groups of three: father, mother, and child. The mother and child motif is frequent. Women giving birth and pregnant are prevalent subjects, as well as amorous couples in different sexual postures and figures with skin diseases. In the zoömorphic objects, the depiction of the alligator, the iguana, the turtle, the jaguar, and the snake predominate, as well as the monkey, the brilliant macaw, and the more sober parrot.

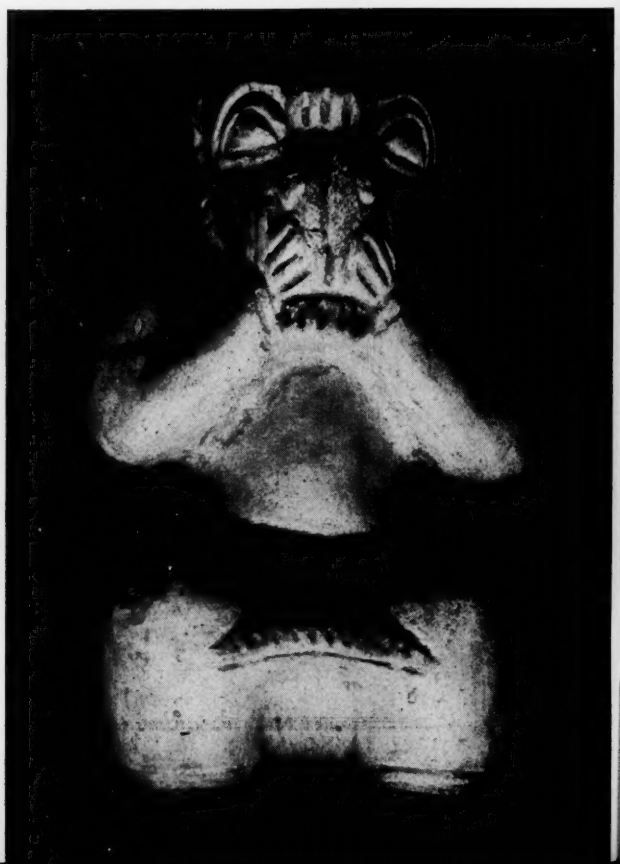
From the vague reports of the Spanish chroniclers it is known that in the southern coastal regions of Ecuador, at the time of the Conquest, the Spaniards found many strange cults among the coastal people; some reports state that homosexual practices among the men had a ceremonial significance. Many of the islands off the coast were uninhabited and reserved as places for the worship of sea and serpent deities. These islands were only visited during certain periods of the year. Intolerable to the padres in their honest zeal, many of these cults were abolished ruthlessly, idols and symbols were destroyed or exorcised, and in many cases the facts were not even reported, since these practices were considered as being inspired by the devil in the incalculably evil heathen mind.

One of the most interesting pieces in existence

is a clay idol to some snake worship which was discovered in Manabí a few years ago and is now in the Quito University Museum. The figure has a heart-shaped body and a heavy deformed head. The arms of the sitting idol are entwined by snakes, molded in high relief, whose flat heads face each other across the idol's chest. The deformed head is also entwined by snakes. The figure has a goatee-like beard trimmed into two points; this is a rare occurrence among the clay heads of Esmeraldas and Manabí which generally portray a rather hairless people. It may be that a sparse beard was cultivated by members of the higher or priestly classes. This idol was unearthed by a mulatto peasant and sold to an Indian woman who had the reputation of practicing witchcraft and who mingled her Catholic rituals with necromancy

← Figurine showing a replica of the breastplates, ear-plug ornaments, and necklaces worn by ancient Esmeraldas people, some of which were of gold. (Mueller Collection, Quito)

↓ Human figurine with animal mask, from La Tolita. (Mueller Collection, Quito)



The beautiful and the grotesque:

→ Woman's head with tubular ornaments in her ear lobes, from La Tolita. (Ferdon Collection, U.S.)

↓ Human face top of ancient earthenware jar (probably a funeral urn), Tachina, Esmeraldas. (Wuth Collection, Quito)

and superstition (this is by no means rare in Latin America). Thus it was that a few years ago, in a tropical village of the province of Manabí, this idol was found by an enlightened collector. He

found the *muñeco* (doll), as it was called in the environs, sitting on a shelf-like altar surrounded by burning candles, with a few effigies of Catholic saints in a subordinate position, and enjoying a modest reputation in the vicinity as being the most miraculous interceding "saint" having the power to cure snake bites. Many cures were ascribed to this ancient idol imbued with supernatural powers by the belief of primitive minds of the 20th century, as it may have been a millenium ago when it was first molded by some ancient potter.

In Manabí, the Cerro de Hojas (Hill of Leaves), an ancient place of worship, has been famous for years. Here were found the giant U-shaped stone chairs carved with reclining jaguar figures, and in the village of Picoazá, near this site, were found the quadrangular stones carved with a human figured idol with a bird's beak instead of nose which the historian Gonzalez Suarez (perhaps mistakenly) traces back to the Mayan god Hun-Ab-Ku. The symbols surrounding this figure he conjectures to be symbols of the four elements – a double hook

▲ **Unidentified idol, half beast, half man; from Atacamas, Esmeraldas. (Wuth Collection, Quito)**

➔ **Serpent clay idol, approximately 50 centimeters high; from Manabí. (Quito University Collection)**

symbol, like an inverted S, represents the air; fire is represented by a curved line wound into a disc, which the deity holds in its hand; water is represented by an eel, and a small dog or hyena-like animal represents the earth.

The contemporary tropical village of Esmeral-

das, on the banks of the river of the same name, and built at a small distance from the sea shore, is a happy hunting ground for archeologists and collectors. Several bazaar-type shops are found there, places of a thousand smells where jaguar, alligator, snake, and ocelot skins are sold together with an incredible assortment of vegetable ivory nuts, aromatic resins, and straw fibers, as well as gold and clay archeological objects found on the beaches or unburied in the surrounding river banks and jungle growth. One of these places belongs to an elderly creole gentleman who has a huge crated collection of archeological objects collected for more than forty years and which he labels as being Egyptian! One of the pieces he has on exhibition is a figurine representing a postal courier of those ancient times. On his, as usual, deformed head he carries four tied tablets. His attire consists of a necklace, a breast plate, and a loin cloth; in his hand he holds what seems to have been a whip to urge the slave carriers under his command. He also carries a water jar and a parrot perches on his shoulder, perhaps as a symbol of swift travel.

Elsewhere I have seen a perfect and unbroken figure in grayish white clay, of a humble tropical man devoid of any ornaments or insignia of office, with only a short loin cloth. In a contemplative, everlastingly human way, he sits with an elbow resting on the right hand lying on his lap and his chin resting on his left hand, as if his deformed mitre-shaped head or his thoughts were too heavy for him. His slanted eyes are downcast and his chiseled face (of who knows what origin) is a deep study of human thoughtfulness.

It is to be hoped that some efficient and wealthy institution will take an interest in further unraveling the mystery of the archeological relics of Esmeraldas and Manabí, before nature and man complete their work of destruction and efface this human legacy from the face of the earth.

U-shaped stone chair on reclining human figure. The reclining jaguar figure is also a prevalent motif for these chairs. Northern Manabi. (Wuth Collection)

Self-Portrait of a Mountain Lion

Robert T. Orr

PHOTOGRAPHER'S NOTE:

The picture was taken in Sequoia National Park on the trail to Muir Grove, August 1940. For two summer seasons I had tried to get a picture, but failed – either deer, bear, foxes, or human beings, tripped my camera. I also learned that the lion will usually cover his trail again in about 10 days, as was the case on the Muir Grove trail. On some occasions, though, a lion will hunt a particular area for several nights if it is apparently very good hunting. I have even scared them off the trail while out setting up my equipment.

The camera I used was a Kalart 9x12 cm. I used a stop of f. 6.8, shutter speed of 0.02 second, and a wide-angle attachment.

John H. Applegarth

THE MOUNTAIN LION or puma is the second largest living cat in the New World, being exceeded in size only by the jaguar. Within historic times it has ranged widely over the forested parts of the Americas from Canada south to the Straits of Magellan. Altitude appears to be of little significance in its distribution as pumas have been taken from sea level in parts of California to over 10,000 feet in the Andes.

In North America the principal food of this big cat consists of deer. Before the species was greatly reduced in numbers it served as one of the principal controls in curbing deer populations. Many of our present-day deer problems might never have arisen if man had not so systematically reduced or, in many instances, eliminated these large native carnivores. The fact, however, that domestic stock may fall prey to mountain lions has justified their extermination in many regions.

Five Thousand Years to China—BY ATOMIC ENERGY

COWERING a bit (surely far less than we should), but still smug in sophisticated satisfaction, we contemplate a staggering force, as yet unharnessed, that is within man's grasp. "The Hydrogen Bomb" we call it; or, characteristic of our amazing ability to accept danger and submerge fears beneath a contemptuous familiarity, we have even given it a nick-name — "The H-Bomb."

In spite of the fear and uncertainty and the threat of sudden annihilation that consort with it, we consider the H-Bomb as our most recent prize, as the most modern of modern things. We point with pride to the fact that man now toys with the same source of energy from which the sun draws its power to shine so steadily for billions of years. (Let us hope that this — our new ability to completely destroy all of man and his civilization and the products of a hundred million years of evolution, by which we can destroy ourselves as well as an enemy — will be the sobering cup.)

Such callous pride as ours will likely be little disturbed by the knowledge that during the dark ages in Europe the Chinese astronomers were observing and recording one of the greatest thermo-nuclear explosions which can possibly occur. Nuclear energy not something new? No, like all the phenomena of nature, it has always been, but man has only just now discovered and named it.

The explosion recorded by the Chinese astronomers was the all-but-complete destruction of a giant star in the direction of the constellation of Taurus, the Bull. About six thousand years ago, a giant ball of gas, several times larger than the sun and probably ten thousand times brighter, ran short of fuel. The energy of a star seems most likely to come from the conversion of hydrogen into helium, and as long as there is plenty of hydrogen (as is the case with our sun), the star can shine steadily in a delicate balance between pressure and energy. But when the hydrogen begins to run out, the balance is drastically upset and an explosion can occur. So the giant exploded.

The explosion was far more than a flash, it was a prolonged flare of unbelievable intensity. The maximum light was probably greater than 500,000,000 suns. This sudden burst of light surged outward in all directions like ripples from a stone dropped in a pool. The light raced across space covering 186,000 miles each second, and five thousand years after the explosion, reached the earth to allow the eyes of men to learn of the cataclysmic event. And most men were too decadent, too embroiled in strife, even to take notice; and none understood. The year was A.D. 1054.

Translation of ancient Chinese chronicles indicate that what they termed "a guest star" appeared in the constellation of Taurus on a date corresponding to July 4, 1054 and remained visible to the naked eye for nearly two years, until April 17, 1056. Its initial brilliance is indicated by the account:

"It is visible by day, like Venus; pointed rays shot out from it on all sides; the color was reddish white. Altogether it was visible for 23 days."

Presumably the twenty-three day period is the time it was bright enough to be seen during the daytime.

While the exact position was not given, it was stated as being near a star designated today as Zeta Tauri, the star which marks the tip of the left horn of the Bull. Exploration of this region of the sky reveals a telescopic object of most remarkable form. It is a nebula, or cloud of luminous gas, of most irregular shape, resembling a great cosmic splash! At its center is a very faint blue star. This strange object, known

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The American lion differs greatly from its African relative in habits. It is not an animal of the open plains and is rarely seen even in localities where the species may be considered abundant. There are very few authenticated reports of mountain lions attacking man although this has occurred. The offender in such cases has usually been either a wounded individual or an old animal that was suffering from hunger and was unable to secure its regular food. There is no doubt that a rabid lion would be quite dangerous.

The females have from one to six young in a litter and appear to breed once every two or three years. The kittens are spotted, unlike the adults, and do not take raw meat until they are about six weeks old. Young pumas often make interesting pets but as they attain maturity there is a certain amount of risk to the owner.

Although young lions may stay with their mother until they are a year or two old, members of this species are rather solitary and are great wanderers. Individuals have been reported to cover more than twenty-five miles in a single night. The ability of these cats to travel considerable distances plus their secretive habits account for the need to use dogs in lion hunting.

There are many Indian legends woven about the puma, some revering it and others deriding it. The tribes in Baja California would not harm these animals as they depended on them indirectly for food. The kill left by a lion was an important source of meat to these primitive people. The Incas of Peru, on the other hand, held great hunting expeditions to eliminate the lions so that the guanacos and vicuñas, which they used for food as well as a source of wool, might flourish. It has been suggested by some that this was probably the first game management project in the New World.

for more than a century as "the Crab Nebula," has been studied intently by astronomers ever since Lord Rosse observed it and gave it its name in 1844.

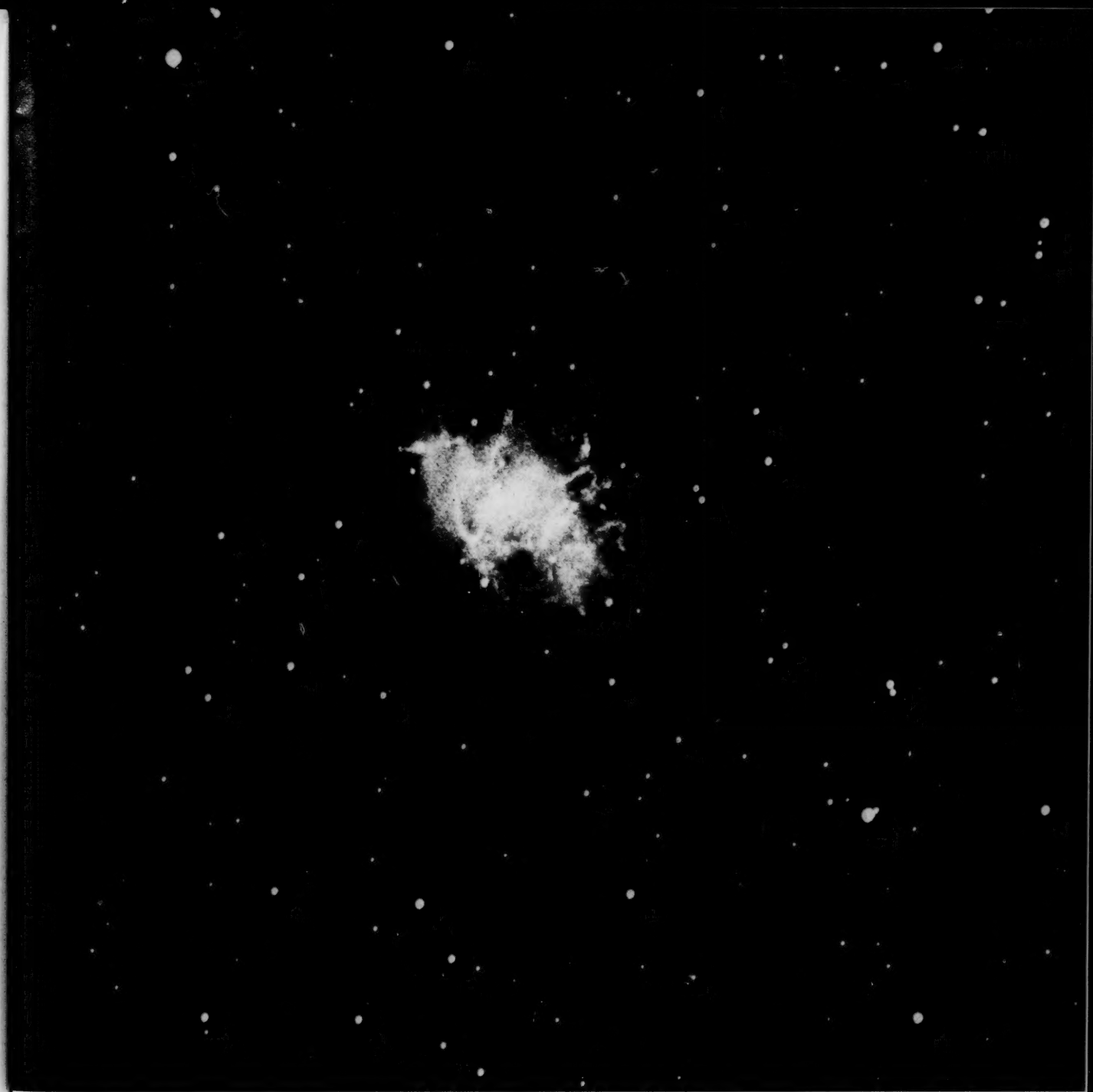
Not only does its structure and general appearance suggest an explosion, but measurements over a number of years reveal that it is expanding. With the spectroscope the rate of expansion in the direction of the earth is measured at over 800 miles per second. With this figure and the observed change in size over the years, both the distance and the true size of the nebula can be determined. The distance is such that it takes 5,000 years for the light to reach the earth, and the size is such that the time required for it to reach its present size is about 900 years! The evidence is overwhelming that this strange nebula resulted from that explosion the Chinese recorded 901 years ago. We are observing what might be called the "mushroom cloud" of a thermo-nuclear explosion on a cosmic scale.

The story told above has been reorganized from the order of events as they actually occurred purely for the sake of "sequence." Actually astronomers deduced the origin of the Crab Nebula as that of an exploding star or "supernova," determined the date, and searched the records for an historical account. No mention was found in western history of a strange star, but accounts were found in the chronicles of both the Chinese and Japanese.

There is more to this than just the fireworks of a spectacular celestial show. Astronomers have studied this and other explosions like it and have discovered a measuring stick by which to determine distances of some of the most remote objects in space. While there have been but three outbursts of supernovae in recorded history that were visible to the naked eye, such explosions are found to be much more frequent within the larger volume of space covered by modern telescopes. It has been found that every supernova rises in brightness to almost exactly the same maximum. Thus if we know how far away any one of these exploding stars is, we can determine the distance of any other by measuring its maximum apparent brightness.

Supernovae make themselves most obvious, even in very distant galaxies. Sometimes the brightness of the single exploding star will rival the brightness of the entire galaxy in which it appears. A measurement of the apparent brightness of the star and its comparison with the brightness of the galaxy gives us a measure of the distance and the approximate number of stars in the galaxy. For example: if we discover a supernova in a distant galaxy which appears to be about one-tenth as bright as the whole galaxy, we can make a reliable estimate of one billion stars like our sun in that galaxy; for the average brightness of such an exploding star is equal to about 100,000,000 suns.

A supernova (indicated by arrow) in a galaxy designated as NGC 4725. The light from the pale spiral form comes from billions of stars; the few scattered bright stars are our own neighbors, in the foreground, comparatively close to us. (Mt. Wilson Observatory photo, May 1940)



A very plausible explanation of the explosion of these strange stars involves an internal rearrangement which may convert a giant star into a dwarf – a most amazing sort of dwarf known to astronomers as a "white dwarf," a star so small as to compare in size with the earth, yet containing as much material as our sun. This means a star a hundred thousand times as dense as water, or 9,000 times as dense as lead. It is a critical piece in the giant jigsaw puzzle of the birth, evolution, and death of the stars. Resting at the center of the Crab Nebula, like a tiny glowing seed, is just such a star. G.W.B.

The Crab Nebula (M 1, Tauri), by Crossley Reflector, January 1938. (Photograph courtesy Lick Observatory, University of California)

More Atlantic Fishes

Fishes of the Western North Atlantic. *Number One, Part Two. Sawfishes, Guitarfishes, Skates, Rays; [and] Chimaeroids.* By Henry B. Bigelow and William C. Schroeder. Editor-in-Chief, John Tee-Van. Memoirs of the Sears Foundation for Marine Research, New Haven. 1953. xv + 588 pp., 2 maps, 127 figs. $15.00.

Five years ago I had the pleasure of reviewing the first volume of the above series. Since then it has become a milestone in modern ichthyology. Although the second volume, as did the first, deals primarily with the Atlantic elasmobranchs or cartilage fishes, there is still a great deal of information which is of interest to the ichthyologist and sports fisherman in the Pacific area. The fact that a volume of this nature can be so carefully prepared that it will appeal equally to the scientist and layman is no small tribute to the painstaking work of the writers as well as to the editorial planning. The detailed illustrations are very helpful and the dichotomous keys will prove essential to anyone having a classification problem dealing with fishes of this type.

In one section alone, the Addendum to *Raja erinacea,* by Daniel Merriman and associates (P. 188–194), there are presented the results of a year's study of some 15,000 skates of this species. This is a fabulous amount of data as the writer well knows, since he has been accumulating information on the Pacific elasmobranch fishes for several years.

Suffice to say that for the final word on sawfishes, guitarfishes, skates, rays and chimaeroids, one must consult this new volume.

EARL S. HERALD

Steinhart Aquarium
California Academy of Sciences

Men of a feather

The world's birds have been fairly well described and pigeonholed but interest in them does not therefore cease. If there are few birds we do not know by name, there are many of whose lives we know too little. New recruits to the science of ornithology must be biologists, not classifiers.

The Lives of Wild Birds. By Aretas A. Saunders. Doubleday & Company, Inc., Garden City, New York. 1954. 256 pp., line drawings by Dominick D'Ostilio. $3.50.

"That is," Mr. Saunders, who is a teacher and writer as well as a naturalist, says in his Introduction, "the goal of ornithology is to be reached by the study of the living bird, not the dead one." *The Lives of Wild Birds* stems from his 14 summers teaching ornithology in the Allegany School of Natural History. The student who would be more than bird-watcher will get started right by studying this book which is in the style of excellent nature writing rather than that of textbooks. His special science is to the author part of the science of life, which means that his book teaches principles of biology as well as much detailed knowledge of birds. The chapter on Ecology, for instance, is one of the best and clearest summaries of that fundamental subject we have read anywhere and should be read by everyone as part of his general education. And *PD* cheers Mr. Saunders for his concluding chapter on Conservation, especially this windup: "The matter of saving live birds for the future, birds that can give to man great pleasure, a saner life, an uplifting of ideals, a deeper insight into the wonders of this world and the life it holds . . . is to be solved by *saving, in their natural conditions, areas of wild land*" (italics ours).

An Introduction to Ornithology. By George J. Wallace. The Macmillan Company, New York. 1955. xii + 443 pp., 180 text figs. in halftone and line. $8.00.

The serious pursuit of any science to the point of professional competence takes one these days through college and textbooks. The latter can be more than a necessary evil, if no more technical than need be, and well-rounded in treatment of the subject. This one covers the bird inside and out, and discusses, among other things, distribution, ecology, economics, conservation, game management, the fossil record, and ornithological methods. There is a bibliography with 314 items besides a summary of bird societies and their publications. If Mr. Saunders decides you to be an ornithologist, Dr. Wallace will take you from there along the student's path.

Stray Feathers From a Bird Man's Desk. By Austin L. Rand. Doubleday & Company, Inc., Garden City, New York. 1955. 224 pp., cartoon decorations. $3.75.

Your student ornithologist emerges one day with a doctor's degree and launches into a career as professor, in turn, or curator in a museum. He will probably enjoy much summer and weekend field work in his own state and country, and by good luck perhaps many trips or expeditions to other parts of the world. It is a good life. It has been so good, in fact, and accrued to him so much of interest, that he is impelled one day to sit down and share the accrual with his fellow men, trusting that curiosity about the ways of birds, at least, is rather widespread, if not about the ways of bird men. Thus he comes to write something as far as possible from a textbook – something like *Stray Feathers From a Bird Man's Desk,* to get down to cases. And if he is Dr. Austin L. Rand, curator of birds in the Chicago Natural History Museum, who has pursued birds from Nova Scotia (Dr. Rand was born there) to Madagascar, and from the Yukon to the Philippines, the concoction may be varied indeed. It will in fact be a potpourri of Chinese bird's nest soup, bird names for boats (Dr. Rand has been asked to furnish them), birds using tools, the intelligence of crows and the dullness of owls, oysters catching oyster catchers, desert birds carrying water to their young, and so forth – all told, it should be noted, in a very matter-of-fact sort of way! This is refreshingly different from the "ah-the-wonders-of-nature" style.

Our Beautiful Western Birds: *Observations of a Naturalist.* By Russell T. Congdon, M.D. Exposition Press, New York. 1954. 408 pp., 4 full-color plates, 185 halftone photographs. $9.00.

Some of our better known bird men (and women), many of whom have made valuable contributions to science, are busy in other fields and bird students by avocation only. Dr. Russell T. Congdon, for instance, is a practicing senior surgeon in Wenatchee, Washington. Yet he and his wife published early this year under the Exposition "Banner" imprint a most handsome big book of their own photographs and observations ranging over western North America and the Hudson Bay country. This is the kind of personal experience bird lovers love to tell each other and with which

they hope to win new converts. The book itself is a good clean offset job but – oh, dear – it is printed throughout in *dark green* ink, the kind which after you have read a few pages of it something in good old black looks purple for a while. Much of nature is green, to be sure; but photos in black not only keep their contrast values to the fullest, they also lend themselves the more readily to the mental and emotional filling in of true color. Green just stays green! We hope there will be another printing of this worthwhile book – in black ink. It will be easier on the eyes.

Birds of the World: *Their Life and Habits.* By Paul Barruel. Translated [from the French] by Phyllis Barclay-Smith. Oxford University Press, New York. 1954. 204 pp., over 200 paintings, drawings, photos. $12.50.

One is fortunate indeed whose nature library can include not only the everyday handbooks and guides to his own locality, but also a few of the fine, showy volumes with beautiful reproductions in color of first-rate art work or photographs. The title *Birds of the World* is grandly inclusive, but the artist-naturalist and author, Paul Barruel, would not have you think that here is a key to the identification of every one of the earth's thousands of species. Rather he would convey, through his own knowledge and artistry, something of the wonder and beauty of the bird world, which indeed covers the globe, land and sea, and whose forms and ways are so varied as to be a source of perpetual interest and excitement to men. This could only be done by the careful selection of significant detail to illustrate general principles in the text, while at the same time going all the way in splendid graphic presentation.

The Bird Book: *A Picture Album of American Birds.* By Leon Augustus Hausman. Arco Publishing Company, Inc., New York. 1955. 159 pp., 362 birds illustrated, 16-page full-color section. $2.50.

"An Arco Handy Book" – size 6¾ by 9¾ inches. Identification of birds is largely from halftones, which are for the most part taken from various National Audubon Society photographs and color-card drawings. Brief descriptive paragraphs are popularly styled. The 16-page "Audubon Color Album" hardly does justice to Audubon in reduced size and off color, but does brighten the book.

Scientia Sinica

Science and Civilization in China. By Joseph Needham, with the research assistance of Wang Ling. Volume 1, Introductory Orientations. New York: Cambridge University Press. 1954. xxxviii + 318 pp., 34 figs. incl. 13 halftone plates, 2 folded insert maps. $10.00.

The Astronomy article in this issue, "Five Thousand Years to China – by Atomic Energy," should bring to many a mind past interesting discussions and arguments with likewise indifferently well-informed friends, over the degree of the advancement of scientific knowledge in China, with especial reference to and involving comparisons with time before the dawn of science in the West. On one side it may be held that the Chinese invented or thought of practically everything from paper money to protons while Europeans were still clubbing each other in caves; on the other, that poets, painters, and philosophers may have flourished early in China, but scientists never, at least by modern definitions. Most such arguing was pointless because neither party could claim possession of the facts to clinch a point.

Now a Cambridge University reader in biochemistry and foreign member of Academia Sinica, uniquely qualified for the task, has brought the whole matter out of the dark of speculation into the light of certain, documented knowledge. The size of Dr. Needham's task is almost beyond comprehension. Consider the titles of forthcoming volumes: 2, History of Scientific Thought; 3, Mathematics and the Sciences of the Heavens and the Earth; 4, Physics, Engineering, and Technology; 5, Chemistry and Industrial Chemistry; 6, Biology, Agriculture, and Medicine; 7, The Social Background (with unified bibliographies and index to the whole work). Volume 2 is probably just off the press, and others are in preparation).

"The present book is addressed," Dr. Needham says in his Preface, " . . . not to sinologists, nor to the wider circles of the general public, but to all educated people, whether themselves scientists or not, who are interested in the history of science, scientific thought and technology, in relation to the general history of civilization, and especially the comparative development of Asia and Europe." Perhaps it is this first volume that will be of most interest to the general reader. Apart from its introductory function for the series – giving the genesis and plan of the work and bibliographical notes – it will stand by itself for its considerable survey of China's topography and human geography, its outline of Chinese history, and perhaps especially for its introduction to the ever-fascinating subject of the beginnings and progress of Europe's awareness of China and her ancient, seemingly mysterious and enignatic civilization – the chapter is entitled "Conditions of Travel of Scientific Ideas and Techniques between China and Europe."

The Englishman, the European, is oriented toward China as at the other side of the continental heartland; we on the Pacific Coast think of China as being across the greatest ocean from us. For both, spatial concepts of China are compounded with temporal. Dr. Needham feels that the greatest value of his work may be that it will help increase our understanding of that other of the world's two major streams of civilization. Surely nothing is worse needed in the world today. We look forward to the future volumes in this epochal series.

"Creatures of the Fifth Day"

The Great Story of Whales. By Georges Blond. Translated from the French by James Cleugh. Hanover House, Garden City, New York. 1955. 251 pp., 26 photos. $3.95.

The largest animal that lives, or has ever lived, on earth was bound from earliest times to awe man and grip his imagination as nothing else could. For the bigness of him, in the person of the biggest whale, the blue whose length runs from 70 to 90 or even 100 feet,* is awesome and almost beyond imagining in a free, living body. The only thing of comparable grandeur, it may be, is the giant sequoia tree at its hugest. And the hunting of him could

*Greater lengths have been reported for *Balaenoptera musculus*, the blue whale, but our nearest authority, Dr. Robert T. Orr of the California Academy of Sciences, is certain that the figure of *150 feet* given in *Sailing Directions for Antarctica* (Pub. No. 138, Hydrographic Office, U.S. Navy, Washington, 1943) is a fantastic error.

only be the most daring, the most terrible of man's age-old predatory activities. These may be the reasons why, long past the great "romantic age" of whaling, the *Moby Dick* age, the literature of whales and whaling is a still living stream. Now to stand beside Robertson's *Of Whales and Men* and Stackpole's *The Sea-Hunters comes,* from France, Georges Blond's *The Great Story of Whales.*

Edouard A. Stackpole's book is a documented history of American whaling down to the modern era; Dr. R. B. Robertson wrote of modern factory-ship whaling, and of whalemen as types. Georges Blond, the young French journalist and novelist, is concerned first with the whale, then with whaling – deep-sea whaling – from its 12th century beginnings with the Basques in the Bay of Biscay to the technological present.

The Great Story of Whales falls into three parts, following a brief introductory chapter. In "Creatures of the Fifth Day," Blond achieves the kind and quality of nature writing that makes Frank Stuart's *A Seal's World* living natural history. The life and death of a blue whale family, and the plunge of a starving cachalot to incredible depths for food are told in the Stuart and Carrighar manner. For "The Era of the Cachalot" Blond has adapted the account of a four-year sperm whaling voyage from the private journal of Nelson Cole Haley, who sailed from New Bedford in 1849 as harpooner on the *Charles Morgan.* And if, when you read "The Whalers of the Antarctic" you feel you have been there before, you must have read *Of Whales and Men* first. This does not imply that Blond has merely rehashed Dr. Robertson; it means only that he is describing precisely the same heavily capitalized giant factory-ship-cum-catcher-steamer type of operation among the ice floes of the South Atlantic on which Robertson served as medical officer. Blond has purposely fictionalized his account, streamlining it for the type, and quite truly and successfully if we take the doctor's version as standard.

Thus we get in one book an intimate glimpse of the whale where, and how, he lives; a sweeping sketch of the history of whaling; and satisfactorily detailed pictures of the two principal historic phases of whaling.

Yankee Whalers in the South Seas. By A. B. C. Whipple. Doubleday & Company, Inc., Garden City, New York. 1954. 304 pp., drawings by Richard M. Powers, endpaper sketch-map. $3.95.

One of the most harrowing true stories in whaling lore is the encounter of the whaler *Charles Morgan,* Captain Sampson, with cannibals when becalmed among the Kingsmill (Gilbert) Islands. The story is retold with equal high tension from Nelson Haley's journal, by Blond in *The Great Story of Whales* and by Whipple in *Yankee Whalers in the South Seas.* It is Whipple who gives exactly the source in his bibliographical notes. Constituting his last chapter, these notes, appropriately titled " 'Onshore Grounds' or Pursuing the Whale Through Museum and Library," are an interesting ramble through the literature of whaling and of the Pacific as well as the many fascinating old whaling museums from Sag Harbor to Salem.

An associate editor of *Life* and an M.A. from Harvard, Mr. Whipple may be called a scholarly journalist. The combination gives authority plus readability to his recasting of such classics as the sinking of the *Essex* by a charging whale with its grim aftermath of one of the greatest small-boat passages of all time; the cruise of the *Acushnet* (Melville's *Pequod* of *Moby Dick);* the piquant story of the young gentleman in the fo'c's'l who turned out to be – ; some corkers about castaways and mutineers; and a host of ripping yarns handed down from those days of bluff ships and rough men. What better reading for the armchair adventurer?

For archeological beach-combers

The Archaeology of the Santa Elena Peninsula in Southwest Ecuador. By G. H. S. Bushnell. New York: Cambridge University Press. 1951. xv + 155 pp., 4 halftone plates, frontis. in full color, 52 text figs. in line. $7.50.

The article in this issue on the Esmeraldas and Manabí cultures of coastal Ecuador introduces a new archeological field to *Pacific Discovery,* one that is truly of the Pacific. Obscure beside the great peaks of Aztec, Mayan, and Incan civilizations, this area is, so far as we have seen, unknown to the average reader – there are no popular books about it (unless we have missed something; there may be an article or two in other journals such as ours, but we have not looked them up).

This book by the curator of the Museum of Archaeology and Ethnology in Cambridge, England, does not pertain precisely to the area of our article, nor can it be called a popular presentation. But so far it is the only thing we have found in book form which can be recommended to the serious reader whose curiosity, about the place of coastal Ecuador in the total picture of American archeology, is sufficiently aroused by Miss Robinson's article to send him after further reading. This perhaps unusual reader will find much in Dr. Bushnell's book that touches directly on the matter of our *PD* article; and if he has some background in archeological literature he will find it readable. In any case he will find it a handsome addition to an amateur (or professional) archeologist's library – or any library of man and nature in the Pacific World. In its impeccable British typography, presswork, and casing, it has a definite fine-book quality of appeal to the collector. D.G.K.

"On Escaping to the South Seas"

Books mentioned in Editorial, pages 1-2:

Tusitala of the South Seas: *The story of Robert Louis Stevenson's Life in the South Pacific.* By Joseph W. Ellison. Hastings House Publishers, New York. 1953. xvi + 297 pp., bibliography, index. $5.00.

Tahiti, Voyage Through Paradise: *The story of a small boat passage through the Society Islands.* By George T. Eggleston, with a photographic log by the author. The Devin-Adair Company, New York. 1953. 252 pp., 100 photographs, index. $6.00.

Tahitian Holiday. By David Huntington. Henry Holt and Company, New York. 1954. x + 309 pp., 32 photographs, endpaper chart, index. $4.95.

Raroia: *Happy Island of the South Seas.* By Bengt Danielsson. Translated from the Swedish by F. H. Lyon. Rand McNally & Company, Chicago. 1953. 304 pp., 53 photographs, endpaper chart in color. $4.50.

Doctor to the Islands. By Tom and Lydia Davis, with illustrations by Tom Davis. Little, Brown & Company, Boston. 1954. 331 pp., endpaper chart. $5.00.

INFORMATION DESK

Mystery of the Whittier lawn

EDITOR, *Pacific Discovery*
SIR:

What is this thing? . . . It is about three and a half inches long. The thing comes up overnight in just a small area in a St. Augustine grass lawn. No one around here has seen them before. . . . I have walked over many a lawn in my mail job and this is the first one I have seen.

We have called it a "chicken claw" – the claw is orange-red and the stem cream-color. Stem hollow and rather porous. It wilts back same day it comes out and, strangely, just on week-ends so far. . . .

RAYMOND J. QUIGLEY

Whittier, California, 18 August 1955.

Before reading the expert's reply below, make your own guess as to what kind of thing the Quigley "chicken claw" might be.

EDITOR, *Pacific Discovery*
SIR:

I have your letter of August 25 and the photos of the fungus from Whittier, California. These are undoubtedly photos of *Lysurus Mokusin* (L. ex Pers.) Fr., a member of the order Phallales, family Clathraceae. The members of this order are commonly known as "Stink Horns" because of the fetid odor.

This species is known from China, Japan, Australia, and California. We have specimens in our herbarium from a garden, Santa Barbara, 1936; a lawn, Bakersfield, 1936; a lawn, Fresno, 1941. The erect stalk grew out of an enclosing membrane which remained as a cup or volva about the base. This fact is not shown in the photographs.

LEE BONAR
Professor of Botany and Curator of Mycological Collections

University of California,
Berkeley, 29 August 1955.

A call to Dr. Bonar got us some further details of interest. The specific name Mokusin *is Chinese; L. of course stands for Linnaeus and ex Pers. means that a description was first published by Persoon and incorporated by Linnaeus into his great work; Fr. is Fries, who published a monograph on the Fungi between 1825 and 1830; the parenthesis indicates that the original name was changed, presumably by Fries, keeping the specific but perhaps putting it into a different genus. The species seems to have been accidentally introduced into California and Australia from the Orient, perhaps in soil around some rootstocks.*

—EDITOR.

Readers are invited to send photographs of their curiosities for identification. Any which the editors consider sufficiently interesting or extraordinary will be published and five dollars paid to the contributor. All questions, published or not, will be answered if possible.

A Good Turn For Motorists

Most people consider a car the second-biggest purchase they'll ever make. Anything that extends its life or improves performance naturally contributes to your pocketbook as well as your motoring pleasure. Since our new "Detergent-Action" Gasolines do both, they're prime examples of Standard's planning for you.

Standard has built 4 catalytic reformers in the West to make these cleaner-burning, more powerful motor fuels required for best performance of today's higher compression engines. This program was two years in planning and building—cost $50 million.

This $50 million worth of plants is only part of the $350 million Standard is investing this year to make petroleum more useful and plentiful. Some of it will go for product research, part will pay for new manufacturing facilities. A good share will finance the search for new sources of oil to help supply the 733 gallons a year per person that go into thousands of oil-born products essential to modern living.

So the $350 million is an investment in your future as well as ours. It's one way Standard helps guarantee there'll be plenty of oil to do more jobs today and in the years to come.

STANDARD OIL COMPANY OF CALIFORNIA

plans ahead to serve you better